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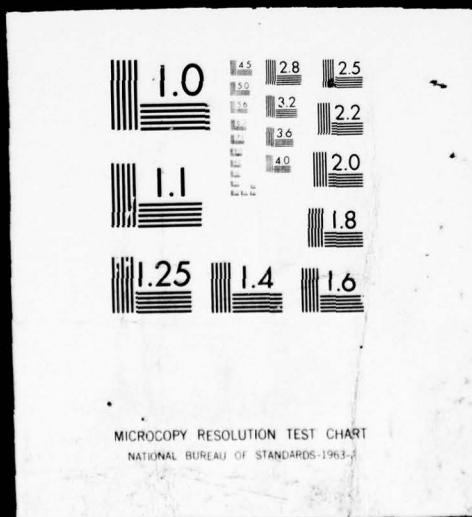
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9 OCCUPATIONAL SURVEY REPORT. 2
ELECTRONIC PRINCIPLES

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6 AVIONIC NAVIGATION SYSTEM SPECIALIST

AFSC 32851 .

11 AFPT-90-328-222

22 September 1977

OCCUPATIONAL SURVEY BRANCH
USAF OCCUPATIONAL MEASUREMENT CENTER
LACKLAND AFB TEXAS 78236

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PREFACE

This report presents a summary of the results of a detailed Air Force Electronic Principles Survey of the Avionic Navigation System Specialist, AFSC 32851.

The Electronic Principles Inventory (EPI) was developed by Major Thomas J. O'Connor and Mr. Hendrick W. Ruck and the survey data were analyzed by Captain Elena J. Weber. All are members of the Occupational Survey Branch, USAF Occupational Measurement Center, Lackland AFB, Texas.

Computer programs for analyzing the data were designed by Dr. Raymond E. Christal, Occupational and Manpower Research Division, Air Force Human Resources Laboratory (AFHRL), and were written by the Project Analysis and Programming Branch, Computational Sciences Division, AFHRL.

Distribution of this report is made upon request to the USAF Occupational Measurement Center, attention of the Chief, Occupational Survey Branch (OMY), Lackland AFB, Texas 78236.

This report has been reviewed and is approved.

JAMES A. TURNER, JR., Colonel, USAF
Commander
USAF Occupational Measurement Center

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Chief, Occupational Survey Branch
USAF Occupational Measurement Center

ELECTRONIC PRINCIPLES OCCUPATIONAL SURVEY REPORT
AVIONIC NAVIGATION SYSTEM SPECIALIST
AFSC 32851

INTRODUCTION

This report summarizes the results of the administration of the Electronic Principles Inventory to airmen assigned as Avionic Navigation System Specialist (AFSC 32851). The data for this report were collected during the period April through June 1977.

This report describes: (1) development and administration of the survey instrument; and (2) electronic principles used by DAFSC 5-skill level personnel both CONUS and overseas and assigned to selected major commands.

DEVELOPMENT OF THE ELECTRONIC PRINCIPLES INVENTORY (EPI)

The EPI was developed by personnel from the Occupational Survey Branch who were well qualified in theoretical physics and electronics, as well as in task analysis and survey development. Over 300 maintenance personnel from SAC, TAC, ADC, MAC, and AFCS participated in the development of the inventory. Representing the five ATC training centers, electronics experts who averaged 12 years of maintenance experience and four years of electronic principles instruction experience spent several weeks refining the EPI. In addition, personnel at the Electrical Engineering Department of the USAF Academy and the Air Force Human Resources Laboratory were consulted during the development of the inventory.

The final version of the EPI used in this survey contained 1,257 items in 62 subject matter areas covering all electronic principles training given at the five ATC technical training centers. Table 1 lists the 62 subject areas.

ADMINISTRATION

The Electronic Principles Inventory was administered by mail to AFSC 32851 airmen worldwide. Responses from 344 individuals represented 20 percent of the total of all AFSC 32851 personnel. Table 2 shows the percentage distribution by major command of the survey incumbents.

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TABLE 1
EPI SUBJECT AREAS

<u>SEQUENCE OF SUBJECT AREAS</u>	<u>SUBJECT AREA TITLE</u>	<u>BEGINNING ITEM NUMBER</u>	<u>GPSUM PAGE NUMBER</u>
1	MATHEMATICS	A1	2
2	DIRECT CURRENT AND VOLTAGE	A15	2
3	RESISTANCE	A24	2
4	MULTIMETER USES	B52	3
5	ALTERNATING CURRENT	B61	4
6	INDUCTORS AND INDUCTIVE REACTANCE	B67	4
7	CAPACITORS AND CAPACITIVE REACTANCE	C92	5
8	TRANSFORMERS	C128	6
9	MAGNETISM	C171	7
10	RCL CIRCUITS	D185	8
11	SERIES AND PARALLEL RESONANCE (TIME CONSTANTS)	D229	10
12	FILTERS	D239	10
13	COUPLING	E261	11
14	SOLDERING	E273	11
15	RELAYS	E295	12
16	MICROPHONES	F314	12
17	SPEAKERS	F327	13
18	OSCILLOSCOPES	F342	13
19	SEMICONDUCTOR DIODES	G354	13
20	TRANSISTORS	G404	15
21	TRANSISTOR AMPLIFIERS	G428	16
22	SOLID-STATE SPECIAL PURPOSE DEVICES	H477	19
23	POWER SUPPLIES	H483	19
24	OSCILLATORS	H512	19
25	MULTIVIBRATORS	I539	20
26	LIMITERS AND CLAMPERS	I555	21
27	ELECTRON TUBES	I565	21
28	ELECTRON TUBE AMPLIFIERS AND CIRCUITS	J609	22
29	SPECIAL PURPOSE ELECTRON TUBES	J616	23
30	HETERODYNING, MODULATION, AND DEMODULATION	J632	23
31	AM SYSTEMS	K638	23
32	FM SYSTEMS	K666	24

TABLE 1 (CONTINUED)

EPI SUBJECT AREAS

<u>SEQUENCE OF SUBJECT AREAS</u>	<u>SUBJECT AREA TITLE</u>	<u>BEGINNING ITEM NUMBER</u>	<u>GPSUM PAGE NUMBER</u>
33	NUMBERING SYSTEMS	K685	25
34	LOGIC FUNCTIONS	L695	25
35	BOOLEAN EQUATIONS	L708	26
36	COUNTERS	L733	27
37	TIMING CIRCUITS	M757	27
38	USE OF SIGNAL GENERATORS	M769	28
39	MOTORS AND GENERATORS	M779	28
40	METER MOVEMENTS	N808	29
41	SATURABLE REACTORS AND MAGNETIC AMPLIFIERS	N818	29
42	WAVESHAPING CIRCUITS	N834	30
43	SINGLE SIDEBAND SYSTEMS	O845	30
44	PULSE MODULATION SYSTEMS	O875	31
45	ANTENNAS	O914	32
46	TRANSMISSION LINES	P953	34
47	WAVEGUIDES AND CAVITY RESONATORS	P984	35
48	MICROWAVE AMPLIFIERS AND OSCILLATORS	P1034	37
49	REGISTERS	Q1110	39
50	STORAGE DEVICES	Q1117	40
51	DIGITAL TO ANALOG CONVERTERS	Q1126	40
52	PHANTASTRONS	Q1140	41
53	SCHMITT TRIGGERS	R1141	41
54	CABLE FABRICATION	R1144	41
55	INPUT/OUTPUT DEVICES	S1146	41
56	PHOTO SENSITIVE DEVICES	S1149	41
57	SYNCHRONOUS VIBRATIONS (CHOPPER CIRCUITS)	S1150	41
58	INFRARED	T1159	41
59	LASERS	T1186	42
60	DISPLAY TUBES	T1220	43
61	PROGRAMMING	U1234	43
62	DB AND POWER RATIOS	U1255	44

TABLE 2
COMMAND REPRESENTATION OF SURVEY SAMPLE

<u>COMMAND</u>	32851	
	<u>PERCENT ASSIGNED</u>	<u>PERCENT OF SAMPLE</u>
ATC	7	5
MAC	26	29
SAC	25	25
AFSC	2	1
TAC	18	17
USAFE	10	11
PACAF	5	4
OTHER	<u>7</u>	<u>8</u>
TOTAL	100	100

Total Assigned - 1683
Total Sampled - 344
Percent Sampled - 20%

PRESENTATION OF RESULTS

Personnel responded "yes" or "no" to the 1,257 electronic principles questions as related to their present job. A Group Summary (GPSUM) computer printout is provided in the Appendix portion of this report. Page 1 of the GPSUM lists the three selected groups identified for this report. Pages 2-44 show the percentage of the incumbents responding to the EPI items. The computer program results display the percent members answering "yes" to the subject area questions. The reader can locate a specific subject area by referring to the Appendix page number as listed in Table 1. For example, the Transformers area results are given on page 6 of the GPSUM. The percentage of survey respondents indicating use of specific electronic principles ranged from high in areas such as Relays (p. 12) and Oscilloscopes (p. 13) to low in areas such as Single Sideband Systems (pp. 30-31) and Programming (pp. 43-44). Additional AFSC 328X1 data can be obtained upon request to the Chief, Occupational Survey Branch (OMY).

APPENDIX

PCT MEMS RESPONDING 'YES' BY SELECTED GRPS

OPSUM7 PAGE 1

TABULATION OF ELECTRONIC PRINCIPLES UTILIZATION DATA FOR SELECTED GROUPS
IN THE 32851 CAREER FIELD.

REPORTS ON THE FOLLOWING GROUPS WERE REQUESTED

GROUP IDENTITY = SPC124 ALL AIRMEN DAFSC 32851

CONTAINING 344 MEMBERS.

GROUP IDENTITY = SPC127 ALL AIRMEN DAFSC 32851 STATIONED IN CONUS

CONTAINING 260 MEMBERS.

GROUP IDENTITY = SPC128 ALL AIRMEN DAFSC 32851 STATIONED OVERSEAS

CONTAINING 84 MEMBERS.

PCT MEMS RESPONDING 'YES' BY SELECTED GRPS

CPSUM7 PAGE 2

TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

DY-TSK

- A 1 A1-01 IN YOUR PRESENT JOB, DO YOU USE INSTRUMENTS, SUCH AS METERS OR OSCILLOSCOPES, IN WHICH IT IS NECESSARY TO AMPLIFY OR ATTENUATE VOLTAGE, RESISTANCE, ETC., BY POWERS OF 10.
- A 2 A1-02 DO YOU USE PUBLICATIONS, SUCH AS A TECHNICAL ORDERS OR MAINTENANCE MANUALS, IN WHICH IT IS NECESSARY FOR YOU TO MULTIPLY OR DIVIDE BY A POWER OF 10 BEFORE YOU CAN APPLY THE INFORMATION FROM THE PUBLICATION IN A USEFUL WAY ON THE JOB, REARRANGE AND SOLVE FORMULAS OR EQUATIONS.
- A 3 A1-03 DO YOU CALCULATE THE SQUARE ROOT OF A QUANTITY.
- A 4 A1-04 DO YOU SOLVE FOR UNKNOWN QUANTITIES.
- A 5 A1-05 DO YOU CONVERT NUMBERS TO LOGARITHMS.
- A 6 A1-06 DO YOU USE LOGARITHM TABLES IN ANY TYPE OF CALCULATIONS.
- A 7 A1-07 DO YOU SOLVE QUADRATIC EQUATIONS.
- A 8 A1-08 DO YOU USE THE NATURAL SYSTEM OF LOGARITHMS.
- A 9 A1-09 DO YOU PERFORM CALCULATIONS ON VECTOR QUANTITIES.
- A 10 A1-10 DO YOU WORK WITH TRIGONOMETRIC FUNCTIONS SUCH AS SINE, COSINE, OR TANGENT.
- A 11 A1-11 DO YOU DETERMINE AREAS OF PLANE FIGURES.
- A 12 A1-12 DO YOU SOLVE OR USE SIMULTANEOUS EQUATIONS.
- A 13 A1-13 DO YOU SOLVE OR USE PROPORTIONS.
- A 14 A1-14 DO YOU USE THE TERM VOLTAGE OR VOLTS (V).
- A 15 A2-01 DO YOU USE THE TERM ELECTROMOTIVE FORCE (EMF).
- A 16 A2-02 DO YOU USE THE TERM OHM.
- A 17 A2-03 DO YOU USE THE TERM DYNE.
- A 18 A2-04 DO YOU USE THE TERM AMPERE.
- A 19 A2-05 DO YOU USE THE TERM NEUTRON.
- A 20 A2-06 DO YOU USE THE TERM COULOMB.
- A 21 A2-07 DO YOU USE THE TERM PROTON.
- A 22 A2-08 DO YOU WORK WITH RESISTORS IN YOUR PRESENT JOB.
- A 23 A2-09 DO YOU INSPECT RESISTORS.
- A 24 A3-01 DO YOU CLEAN RESISTORS.
- A 25 A3-02 DO YOU ADJUST RESISTORS.
- A 26 A3-03 DO YOU CHECK OHMIC VALUE OR RESISTORS.
- A 27 A3-04 DO YOU REMOVE OR REPLACE RESISTORS.
- A 28 A3-05 DO YOU REFER TO TEMPERATURE COEFFICIENTS FOR RESISTORS ON ANY TASKS YOU PERFORM.
- A 29 A3-06 DO YOU USE OR REFER TO RESISTOR SYMBOLS SUCH AS FIXED RESISTOR SYMBOLS OR TAPPED RESISTOR SYMBOLS.
- A 30 A3-07 DO YOU IDENTIFY OR CLASSIFY THE RESISTORS YOU WORK WITH AS CARBON, FIXED WIRE, SLIDE TAP, RHEOSTAT, OR POTENTIOMETER.
- A 31 A3-08 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE OHMIC VALUE OF RESISTANCE.
- A 32 A3-09 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE OHMIC VALUE OF RESISTANCE.
- A 33 A3-10 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE OHMIC VALUE OF RESISTANCE.

SPC SPC SPC
126 127 128

90 90 88

MATHEMATICS

87 57 57

42 40 50
12 11 14
34 35 32
9 9 8
15 15 15

8 8 10
8 7 8
19 14 14
17 17 18

5 5 5
5 4 8
26 27 20
97 97 95

DIRECT CURRENT
AND VOLTAGE

44 47 38
96 97 94
20 21 17
13 12 13
93 94 92
16 17 13
20 21 18
16 17 15

RESISTANCE

83 84 79
92 92 90
82 83 80
93 94 89
92 93 88
92 93 90
25 27 19

93 94 89
89 90 85

92 94 86

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TEX

	SPC	SPC	SPC
	126	127	128
A 34 A3-11 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE TOLERANCE.	84	86	79
A 35 A3-12 DO YOU USE RESISTOR COLOR CODES WHICH INDICATE FAILURE RATE.	28	30	24
A 36 A3-13 DO YOU MAKE DECISIONS IN WHICH YOU MUST DETERMINE HOW TWO OR MORE BATTERIES MUST BE CONNECTED TOGETHER TO ACHIEVE A SPECIFIC VOLTAGE.	36	40	21
A 37 A3-14 DO YOU USE OR REFER TO THE SCHEMATIC SYMBOLS WHICH REPRESENT BATTERIES, FUSES, CONDUCTORS, LAMPS, OR SWITCHES	91	92	88
A 38 A3-15 DO YOU CALCULATE TOTAL RESISTANCE FOR SERIES RESISTIVE CIRCUITS.	60	61	56
A 39 A3-16 DO YOU CALCULATE TOTAL CURRENT FOR SERIES RESISTIVE CIRCUITS.	51	53	45
A 40 A3-17 DO YOU CALCULATE INDIVIDUAL VOLTAGE DROPS FOR SERIES RESISTIVE CIRCUITS.	58	58	56
A 41 A3-18 DO YOU CALCULATE POWER DISSIPATION FOR SERIES RESISTIVE CIRCUITS.	42	43	36
A 42 A3-19 DO YOU CALCULATE TOTAL RESISTANCE FOR SERIES PARALLEL RESISTIVE CIRCUITS.	57	59	51
A 43 A3-20 DO YOU CALCULATE TOTAL CURRENT FOR SERIES PARALLEL RESISTIVE CIRCUITS.	49	52	43
A 44 A3-21 DO YOU CALCULATE INDIVIDUAL VOLTAGE DROPS FOR SERIES PARALLEL RESISTIVE CIRCUITS.	56	57	52
A 45 A3-22 DO YOU CALCULATE INDIVIDUAL BRANCH CURRENTS FOR SERIES PARALLEL RESISTIVE CIRCUITS.	47	48	43
A 46 A3-23 DO YOU CALCULATE POWER DISSIPATION FOR SERIES PARALLEL RESISTIVE CIRCUITS.	39	40	35
A 47 A3-24 DO YOU CALCULATE TOTAL RESISTANCE FOR PARALLEL RESISTIVE CIRCUITS.	56	57	54
A 48 A3-25 DO YOU CALCULATE TOTAL CURRENT FOR PARALLEL RESISTIVE CIRCUITS.	48	50	42
A 49 A3-26 DO YOU CALCULATE INDIVIDUAL VOLTAGE DROPS FOR PARALLEL RESISTIVE CIRCUITS.	54	55	51
A 50 A3-27 DO YOU CALCULATE INDIVIDUAL BRANCH CURRENTS FOR PARALLEL RESISTIVE CIRCUITS.	45	46	42
A 51 A3-28 DO YOU CALCULATE POWER DISSIPATION FOR PARALLEL RESISTIVE CIRCUITS.	39	40	35
B 52 B1-01 DO YOU MEASURE RESISTANCE.	94	95	94
B 53 B1-02 DO YOU REPAIR OHMMETERS.	12	14	6
B 54 B1-03 DO YOU MEASURE VOLTAGE.	95	95	95
B 55 B1-04 DO YOU REPAIR VOLTMETERS.	10	11	6
B 56 B1-05 DO YOU REPAIR AMMETERS.	9	10	6
B 57 B1-06 DO YOU MEASURE CURRENT.	90	90	88
B 58 B1-07 DO YOU USE MULTIMETERS.	96	96	95
B 59 B1-08 DO YOU DIRECTLY USE A QUANTITY OF CHARGE CALLED A COULOMB.	9	9	8
B 60 B1-09 DO YOU READ SCHEMATICS.	95	95	95

MULTIMETER USES

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

GPSUM7 PAGE 3

TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

DY-TSK

		SPC SPC SPC			
		126	127	128	
8 61	82-01 DO YOU USE OR REFER TO THE TERM EFFECTIVE VOLTAGE (RMS).	84	85	82	ALTERNATING CURRENT
8 62	82-02 DO YOU USE OR REFER TO THE TERM PEAK TO PEAK VOLTAGE.	92	93	89	
8 63	82-03 DO YOU USE OR REFER TO THE TERM AVERAGE VOLTAGE (DC).	84	84	82	
8 64	82-04 DO YOU USE OR REFER TO THE TERM WAVE LENGTH.	71	75	60	
8 65	82-05 DO YOU USE OR REFER TO THE TERM FREQUENCY.	95	95	95	
8 66	82-06 DO YOU USE OR REFER TO THE TERM INSTANTANEOUS VALUE.	36	38	30	INDUCTORS AND INDUCTIVE REACTANCE
8 67	83-01 DO YOU WORK WITH INDUCTORS OR CIRCUITS CONTAINING INDUCTORS, CHOKES, OR CHOKE COILS IN YOUR PRESENT JOB.	82	83	81	
8 68	83-02 DO YOU INSPECT INDUCTORS.	83	85	80	
8 69	83-03 DO YOU CLEAN INDUCTORS.	71	73	63	
8 70	83-04 DO YOU ADJUST INDUCTORS.	84	85	80	
8 71	83-05 DO YOU REMOVE OR REPLACE INDUCTORS.	86	87	82	
8 72	83-06 DO YOU USE OR REFER TO INDUCTANCE.	73	74	69	
8 73	83-07 DO YOU USE OR REFER TO HENRIES.	54	57	51	
8 74	83-08 DO YOU USE OR REFER TO INDUCTIVE REACTANCE.	55	55	57	
8 75	83-09 DO YOU USE OR REFER TO COPPER LOSS IN INDUCTORS.	13	15	6	
8 76	83-10 DO YOU USE OR REFER TO HYSTERESIS LOSS IN INDUCTORS.	15	18	7	
8 77	83-11 DO YOU USE OR REFER TO EDDY CURRENT LOSS IN INDUCTORS.	16	18	8	
8 78	83-12 DO YOU USE OR REFER TO THE GENERAL RULE THAT INDUCTANCE IS PROPORTIONAL TO THE SQUARE OF THE NUMBER OF TURNS OF THE COIL.	15	17	8	
8 79	83-13 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS DIRECTLY PROPORTIONAL TO THE CROSS SECTIONAL AREA OF THE CORE.	13	15	7	
8 80	83-14 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS INVERSELY PROPORTIONAL TO ITS LENGTH.	14	17	7	
8 81	83-15 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS DIRECTLY PROPORTIONAL TO THE PERMEABILITY OF THE CORE MATERIAL.	13	14	7	
8 82	83-16 DO YOU CALCULATE INDUCTANCE FOR PARTICULAR INDUCTORS USING FORMULAS.	13	14	11	
8 83	83-17 DO YOU CALCULATE THE TOTAL INDUCTANCE FOR INDUCTANCE IN SERIES.	20	21	18	
8 84	83-18 DO YOU CALCULATE THE TOTAL INDUCTANCE FOR INDUCTORS IN PARALLEL.	20	21	18	
8 85	83-19 DO YOU CALCULATE THE TOTAL INDUCTANCE FOR INDUCTORS IN SERIES-PARALLEL CIRCUITS.	19	20	17	
8 86	83-20 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT LAGS VOLTAGE IN AC INDUCTOR CIRCUITS.	34	38	23	
8 87	83-21 DO YOU CALCULATE INDUCTIVE REACTANCE.	18	20	14	
8 88	83-22 DO YOU USE OR REFER TO THE GENERAL RULE THAT INDUCTIVE REACTANCE IS DIRECTLY PROPORTIONAL TO FREQUENCY.	28	29	23	
8 89	83-23 DO YOU WORK WITH POWER INDUCTORS.	59	60	54	
8 90	83-24 DO YOU WORK WITH AUDIO FREQUENCY INDUCTORS.	77	78	74	
8 91	83-25 DO YOU WORK WITH RADIO FREQUENCY INDUCTORS.	81	82	76	

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

GPSUN7 PAGE 5

01-TSK

	SPC	SPC	SPC	
	126	127	128	
C 92 CI-01 DO YOU WORK WITH CAPACITORS OR CIRCUITS CONTAINING CAPACITORS IN YOUR PRESENT JOB.	83	85	74	CAPACITORS AND CAPACITIVE REACTANCE
C 93 CI-02 DO YOU INSPECT CAPACITORS.	90	92	85	
C 94 CI-03 DO YOU CLEAN CAPACITORS.	78	78	76	
C 95 CI-04 DO YOU ADJUST CAPACITORS.	88	88	85	
C 96 CI-05 DO YOU TEST CAPACITORS.	84	84	79	
C 97 CI-06 DO YOU DISCHARGE CAPACITORS.	87	88	82	
C 98 CI-07 DO YOU REMOVE OR REPLACE CAPACITORS.	90	92	87	
C 99 CI-08 DO YOU USE OR REFER TO DISTRIBUTED CAPACITANCE.	24	24	25	
C 100 CI-09 DO YOU USE OR REFER TO ORBITAL STRESS OF ELECTRONS IN A DIELECTRIC.	4	5	2	
C 101 CI-10 DO YOU USE OR REFER TO FARADS, MICROFARADS, OR PICOFARADS.	65	87	79	
C 102 CI-11 DO YOU USE OR REFER TO CAPACITANCE.	82	84	74	
C 103 CI-12 DO YOU USE OR REFER TO DIELECTRIC CONSTANT	18	20	11	
C 104 CI-13 DO YOU USE OR REFER TO WORKING VOLTAGE RATING OF CAPACITORS	69	71	62	
C 105 CI-14 DO YOU USE OR REFER TO CAPACITIVE REACTANCE	39	40	38	
C 106 CI-15 DO YOU USE OR REFER TO CAPACITOR COLOR CODES	49	49	49	
C 107 CI-16 DO YOU WORK WITH CAPACITORS IN DC CIRCUITS	90	92	86	
C 108 CI-17 DO YOU WORK WITH CAPACITORS IN AC CIRCUITS	90	92	87	
C 109 CI-18 DO YOU WORK WITH CAPACITORS IN CIRCUITS WITH BOTH DC AND AC	88	89	83	
C 110 CI-19 DO YOU WORK WITH CAPACITORS IN DON'T REMEMBER WHICH CIRCUITS	16	18	11	
C 111 CI-20 DO YOU CALCULATE CAPACITANCE FOR PARTICULAR CAPACITORS USING FORMULAS	13	15	10	
C 112 CI-21 DO YOU USE OR REFER TO THE GENERAL RULE THAT CAPACITANCE OF A CAPACITOR IS DIRECTLY PROPORTIONAL TO THE DIELECTRIC CONSTANT	11	12	6	
C 113 CI-22 DO YOU USE OR REFER TO THE GENERAL RULE THAT CAPACITANCE OF A CAPACITOR IS INVERSELY PROPORTIONAL TO THE DIELECTRIC THICKNESS	12	14	7	
C 114 CI-23 DO YOU CALCULATE THE TOTAL CAPACITANCE OF CAPACITORS IN SERIES	27	27	26	
C 115 CI-24 DO YOU CALCULATE THE TOTAL CAPACITANCE OF CAPACITORS IN PARALLEL	27	28	26	
C 116 CI-25 DO YOU CALCULATE THE TOTAL CAPACITANCE OF CAPACITORS IN SERIES-PARALLEL CIRCUITS	25	26	24	
C 117 CI-26 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT DOES NOT FLOW THROUGH CAPACITORS, IT ONLY APPEARS TO DO SO	45	47	38	
C 118 CI-27 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT LEADS VOLTAGE IN AC CAPACITOR CIRCUITS	31	33	25	
C 119 CI-28 DO YOU USE OR REFER TO THE GENERAL RULE THAT CAPACITIVE REACTANCE IS INVERSELY PROPORTIONAL TO FREQUENCY	28	30	21	
C 120 CI-29 DO YOU CALCULATE CAPACITIVE REACTANCE	18	18	17	

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMINGSPC SPC SPC
126 127 128

DY-TSK

C 121 C1-30 DO YOU WORK WITH ROTOR-STATOR (VARIABLE) CAPACITORS
C 122 C1-31 DO YOU WORK WITH COMPRESSION (TRIMMER) CAPACITORS
C 123 C1-32 DO YOU WORK WITH ELECTROLYTIC (FIXED) CAPACITORS
C 124 C1-33 DO YOU WORK WITH PAPER (FIXED) CAPACITORS
C 125 C1-34 DO YOU WORK WITH MICA (FIXED) CAPACITORS
C 126 C1-35 DO YOU WORK WITH CERAMIC (FIXED) CAPACITORS
C 127 C1-36 DO YOU WORK WITH DON'T REMEMBER WHICH TYPE OF CAPACITORS

C 128 C2-01 DO YOU WORK WITH TRANSFORMERS IN YOUR PRESENT JOB

C 129 C2-02 DO YOU INSPECT TRANSFORMERS

C 130 C2-03 DO YOU CLEAN TRANSFORMERS

C 131 C2-04 DO YOU ADJUST TRANSFORMERS

C 132 C2-05 DO YOU TROUBLESHOOT TRANSFORMERS

C 133 C2-06 DO YOU REMOVE OR REPLACE COMPLETE TRANSFORMERS

C 134 C2-07 DO YOU REMOVE OR REPLACE TRANSFORMER PARTS, SUCH AS THE PRIMARY WINDING

C 135 C2-08 DO YOU MAKE A DISTINCTION BETWEEN MUTUAL INDUCTANCE AND MUTUAL INDUCTANCE (M)

C 136 C2-09 DO YOU USE THE SYMBOL FOR MUTUAL INDUCTANCE, M

C 137 C2-10 DO YOU REFER TO OR USE THE COEFFICIENT OF COUPLING WHEN WORKING WITH TRANSFORMERS

C 138 C2-11 DO YOU CALCULATE TURNS RATIOS FOR TRANSFORMERS USING CURRENT OR VOLTAGE RATIOS

C 139 C2-12 DO YOU REFER TO REFLECTED IMPEDANCE WHEN WORKING WITH TRANSFORMERS

C 140 C2-13 DO YOU CALCULATE IMPEDANCE INTERACTIONS FOR TRANSFORMERS

C 141 C2-14 DO YOU WORK WITH AUTOTRANSFORMERS

C 142 C2-15 DO YOU WORK WITH POWER TRANSFORMERS

C 143 C2-16 DO YOU WORK WITH AUDIO TRANSFORMERS

C 144 C2-17 DO YOU WORK WITH RADIO FREQUENCY TRANSFORMERS

C 145 C2-18 DO YOU WORK WITH DON'T REMEMBER WHAT TYPE OF TRANSFORMERS

C 146 C2-19 DO YOU CHECK TRANSFORMERS FOR OPEN WINDINGS BY MEASURING RESISTANCE

C 147 C2-20 DO YOU CHECK TRANSFORMERS FOR SHORTED WINDINGS BY MEASURING RESISTANCE

C 148 C2-21 DO YOU CHECK TRANSFORMERS FOR SHORTED WINDINGS BY MEASURING OUTPUT VOLTAGES

C 149 C2-22 DO YOU MEASURE RESISTANCE OF TRANSFORMER WINDINGS TO DETERMINE WHETHER A TRANSFORMER HAS A STEP-UP OR STEP-DOWN TURNS RATIO

C 150 C2-23 DO YOU MEASURE OUTPUT VOLTAGE OF TRANSFORMERS TO DETERMINE WHETHER A TRANSFORMER HAS A STEP-UP OR STEP-DOWN TURNS RATIO

C 151 C2-24 DO YOU REFER TO BASIC TRANSFORMER SCHEMATIC SYMBOLS FOR TRANSFORMERS

TRANSFORMERS

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

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TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK		SPC	SPC	SPC
		126	127	128
C 152 C2-25 DO YOU REFER TO MULTIPLE SECONDARY-WINDINGS SCHEMATIC SYMBOLS FOR TRANSFORMERS		83	84	79
C 152 C2-26 DO YOU REFER TO MULTIPLE TAP SCHEMATIC SYMBOLS FOR TRANSFORMERS		85	87	82
C 154 C2-27 DO YOU REFER TO CENTER TAP SCHEMATIC SYMBOLS FOR TRANSFORMERS		86	87	82
C 155 C2-28 DO YOU REFER TO AIR CORE SCHEMATIC SYMBOLS FOR TRANSFORMERS		63	64	62
C 156 C2-29 DO YOU REFER TO IRON CORE SCHEMATIC SYMBOLS FOR TRANSFORMERS		66	66	65
C 157 C2-30 DO YOU REFER TO COMBINATIONS OF THE ABOVE SCHEMATIC SYMBOLS FOR TRANSFORMERS		74	75	71
C 158 C2-31 DO YOU DETERMINE PHASE RELATIONSHIPS BETWEEN SECONDARY AND PRIMARY VOLTAGES OF TRANSFORMERS USING SCHEMATIC SYMBOLS		48	48	48
C 159 C2-32 DO YOU DETERMINE OR REFER TO THE TYPE OF CORE IN TRANSFORMERS YOU WORK WITH		30	31	26
C 160 C2-33 DO YOU REFER TO OR USE THE GENERAL RULE THAT THE TURNS RATIO OF A TRANSFORMER IS EQUAL TO THE VOLTAGE RATIO		26	29	18
C 161 C2-34 DO YOU USE OR REFER TO STEP-UP OR STEP-DOWN RATIOS FOR TRANSFORMERS		43	43	42
C 162 C2-35 DO YOU CALCULATE VOLTAGE RATIOS FOR TRANSFORMERS USING TURNS RATIOS		18	22	8
C 163 C2-36 DO YOU CALCULATE CURRENT RATIOS FOR TRANSFORMERS USING TURNS RATIOS		13	16	5
C 164 C2-37 DOES YOUR JOB INVOLVE ANY TASKS DEALING WITH THREE PHASE TRANSFORMERS		39	41	32
C 165 C2-38 DO YOU INSPECT THREE PHASE TRANSFORMERS		36	39	27
C 166 C2-39 DO YOU CLEAN OR LUBRICATE THREE PHASE TRANSFORMERS		26	28	19
C 167 C2-40 DO YOU ADJUST THREE PHASE TRANSFORMERS		22	23	15
C 168 C2-41 DO YOU TROUBLESHOOT THREE PHASE TRANSFORMERS		33	35	24
C 169 C2-42 DO YOU REMOVE OR REPLACE COMPLETE THREE PHASE TRANSFORMERS		36	39	25
C 170 C2-43 DO YOU REMOVE OR REPLACE THREE PHASE TRANSFORMER PARTS SUCH AS WINDINGS		7	7	6
C 171 C3-01 DO YOU USE OR REFER TO PERMANENT MAGNETS		58	58	58
C 172 C3-02 DO YOU USE OR REFER TO TEMPORARY MAGNETS		45	48	37
C 173 C3-03 DO YOU USE OR REFER TO RETENTIVITY OF MAGNETIC MATERIALS		16	15	18
C 174 C3-04 DO YOU USE OR REFER TO RELUCTANCE OF MAGNETIC MATERIALS		14	14	14
C 175 C3-05 DO YOU USE OR REFER TO PERMEABILITY OF MAGNETIC MATERIALS		16	17	14
C 176 C3-06 DO YOU USE OR REFER TO RESIDUAL MAGNETISM		22	23	21
C 177 C3-07 DO YOU USE OR REFER TO MAGNETIC LINES OF FORCE OR FLUX		29	32	18
C 178 C3-08 DO YOU USE OR REFER TO WEBER'S THEORY OF MAGNETISM		9	11	4

MAGNETISM

PCT MURS RESPONDING 'YES' BY SELECTED GRPS

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TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

DY-TSK

SPC SPC SPC
126 127 128

C 179 C3-09 DO YOU USE OR REFER TO DONALD THEORY OF MAGNETISM
C 180 C3-10 DO YOU USE OR REFER TO MAGNETIC INDUCTION
C 181 C3-11 DO YOU USE OR REFER TO FLUX DENSITY
C 182 C3-12 DO YOU USE OR REFER TO THE GENERAL RULE THAT FOR
MAGNETIC POLES, LIKE POLES REPEL AND UNLIKE POLES ATTRACT
C 183 C3-13 DO YOU USE THE LEFT HAND THUMB RULE TO FIND THE
DIRECTION OF MAGNETIC FIELDS ABOUT STRAIGHT WIRES
C 184 C3-14 DO YOU USE THE LEFT HAND THUMB RULE TO FIND THE NORTH
POLE OF A CURRENT CARRYING COIL

D 185 D1-01 DO YOU WORK WITH AC, LN, RCL CIRCUITS IN YOUR
PRESENT JOB
D 186 D1-02 DO YOU USE OR REFER TO VECTORS WHEN WORKING WITH RCL
CIRCUITS

D 187 D1-03 DO YOU USE OR REFER TO PYTHAGOREAN THEOREM WHEN
WORKING WITH RCL CIRCUITS
D 188 D1-04 DO YOU USE OR REFER TO SINE WHEN WORKING WITH RCL
CIRCUITS

D 189 D1-05 DO YOU USE OR REFER TO COSINE WHEN WORKING WITH RCL
CIRCUITS
D 190 D1-06 DO YOU USE OR REFER TO TANGENT WHEN WORKING WITH RCL
CIRCUITS

D 191 D1-07 DO YOU USE OR REFER TO WATTS WHEN WORKING WITH RCL
CIRCUITS
D 192 D1-08 DO YOU USE OR REFER TO TRUE POWER (PT) WHEN WORKING
WITH RCL CIRCUITS

D 193 D1-09 DO YOU USE OR REFER TO MAXIMUM POWER (PM) WHEN
WORKING WITH RCL CIRCUITS
D 194 D1-10 DO YOU USE OR REFER TO AVERAGE POWER (PAVE) WHEN
WORKING WITH RCL CIRCUITS

D 195 D1-11 DO YOU USE OR REFER TO APPARENT POWER (PA) WHEN
WORKING WITH RCL CIRCUITS
D 196 D1-12 DO YOU USE OR REFER TO POWER FACTOR (PF) WHEN WORKING
WITH RCL CIRCUITS

D 197 D1-13 DO YOU USE OR REFER TO RESONANT CIRCUITS WHEN
WORKING WITH RCL CIRCUITS
D 198 D1-14 DO YOU USE OR REFER TO BANDWIDTH WHEN WORKING WITH
RCL CIRCUITS

D 199 D1-15 DO YOU USE OR REFER TO SELECTIVITY WHEN WORKING WITH
RCL CIRCUITS
D 200 D1-16 DO YOU USE OR REFER TO RESONANT FREQUENCY WHEN
WORKING WITH RCL CIRCUITS

D 201 D1-17 DO YOU USE OR REFER TO HALF POWER POINTS WHEN
WORKING WITH RCL CIRCUITS
D 202 D1-18 DO YOU USE OR REFER TO BANDPASS REGION WHEN WORKING
WITH RCL CIRCUITS

D 203 D1-19 DO YOU USE OR REFER TO CIRCUIT Q WHEN WORKING WITH
RCL CIRCUITS

RCL CIRCUITS

73 73 73

13 14 10

11 12 10

17 19 11

17 18 11

13 15 8

54 55 51

35 38 26

41 42 38

47 48 44

24 27 18

21 23 17

45 47 58

73 73 73

48 70 62

70 72 67

62 62 62

45 46 40

31 35 19

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK

SPC	SPC	SPC
126	127	128
65	65	64
7	8	4
10	12	4
14	18	10
9	9	7
14	18	10
8	10	4
14	18	10
18	20	11
13	15	8
18	20	11
8	9	6
11	12	6
15	17	10
74	75	74
46	67	64
70	70	70
63	63	61
6	7	4
20	23	12
26	28	20
24	26	19
57	55	62
28	30	21
21	22	17

D 204 DI-20 DO YOU USE OR REFER TO TANK CIRCUITS WHEN WORKING WITH RCL CIRCUITS
 D 205 DI-21 DO YOU DETERMINE VALUES OF TRIGONOMETRIC FUNCTIONS USING FORMULAS
 D 206 DI-22 DO YOU DRAW VOLTAGE, CURRENT, OR IMPEDANCE VECTOR DIAGRAMS FOR CIRCUITS
 D 207 DI-23 DO YOU CALCULATE TOTAL IMPEDANCE FOR CAPACITIVE CIRCUITS
 D 208 DI-24 DO YOU CALCULATE PHASE ANGLES BETWEEN IMPEDANCE AND RESISTANCE IN CAPACITIVE CIRCUITS
 D 209 DI-25 DO YOU CALCULATE TOTAL IMPEDANCE FOR SERIES RCL CIRCUITS
 D 210 DI-26 DO YOU CALCULATE IMPEDANCE ANGLES FOR SERIES RCL CIRCUITS
 D 211 DI-27 DO YOU CALCULATE APPARENT POWER (PA) FOR SERIES RCL CIRCUITS
 D 212 DI-28 DO YOU CALCULATE TRUE POWER (PT) FOR SERIES RCL CIRCUITS
 D 213 DI-29 DO YOU CALCULATE POWER FACTORS (PF) FOR SERIES RCL CIRCUITS
 D 214 DI-30 DO YOU CALCULATE TOTAL CURRENT FOR PARALLEL RCL CIRCUITS
 D 215 DI-31 DO YOU CALCULATE IMPEDANCE ANGLES FOR PARALLEL RCL CIRCUITS
 D 216 DI-32 DO YOU CALCULATE TOTAL IMPEDANCE FOR PARALLEL RCL CIRCUITS USING THE ASSUMED VOLTAGE METHOD
 D 217 DI-33 DO YOU CALCULATE TOTAL IMPEDANCE FOR PARALLEL RCL CIRCUITS USING OHM'S LAW
 D 218 DI-34 DO YOU CHECK CAPACITORS USING OHMMETERS
 D 219 DI-35 DO YOU CHECK CAPACITORS USING SUBSTITUTION
 D 220 DI-36 DO YOU CHECK INDUCTORS USING OHMMETERS
 D 221 DI-37 DO YOU CHECK INDUCTORS USING SUBSTITUTION
 D 222 DI-38 DO YOU USE OR REFER TO THE GENERAL RULE THAT $\text{THETA} = 0$, $\text{PF} = 1$, AND $\text{PA} = \text{PT}$ FOR RESONANT CIRCUITS
 D 223 DI-39 DO YOU CALCULATE RESONANT FREQUENCIES FOR RCL CIRCUITS
 D 224 DI-40 DO YOU USE OR REFER TO THE GENERAL RULE THAT IMPEDANCE IS MINIMUM AND CURRENT MAXIMUM AT THE RESONANT FREQUENCY FOR SERIES RCL CIRCUITS
 D 225 DI-41 DO YOU USE OR REFER TO THE GENERAL RULE THAT LINE CURRENT IS MINIMUM AND IMPEDANCE MAXIMUM AT RESONANT FREQUENCY FOR PARALLEL RCL CIRCUITS
 D 226 DI-42 DO YOU USE OR REFER TO THE GENERAL RULE THAT HALF POWER POINTS ARE AT 70.7 PERCENT OF THE PEAK CURRENT VALUE
 D 227 DI-43 DO YOU USE OR REFER TO THE GENERAL RULE THAT BANDWIDTH IS INVERSELY PROPORTIONAL TO Q
 D 228 DI-44 DO YOU DETERMINE HOW CHANGES IN FREQUENCY, RESISTANCE, CAPACITANCE, OR INDUCTANCE WILL AFFECT CURRENT OR PHASE ANGLES FOR RCL CIRCUITS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK

	SPC	SPC	SPC	SERIES AND PARALLEL RESONANCE (TIME CONSTANTS)
	126	127	128	
D 229 02-01 IN YOUR PRESENT JOB, DO YOU WORK WITH, USE, OR REFER TO SERIES OR PARALLEL RESONANT CIRCUITS OR TIME CONSTANTS	55	55	56	
D 230 02-02 DO YOU WORK WITH, USE, OR REFER TO TIME CONSTANTS	46	47	45	
D 231 02-03 DO YOU WORK WITH, USE, OR REFER TO AVAILABLE VOLTAGE	29	30	27	
D 232 03-04 DO YOU WORK WITH, USE, OR REFER TO TRANSIENT INTERVALS	20	20	19	
D 233 02-05 DO YOU USE OR REFER TO THE GENERAL RULE THAT A CAPACITOR IS FULLY CHARGED (OR DISCHARGED) AFTER FIVE (5) TIME CONSTANTS (1TC)	25	27	25	
D 234 02-06 DO YOU USE OR REFER TO UNIVERSAL TIME CONSTANT CHARTS	12	12	13	
D 235 02-07 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE CIRCUIT CURRENT OR COMPONENT VOLTAGES AFTER A SPECIFIC TIME FOR RC OR LR CIRCUITS	11	13	7	
D 236 02-08 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE THE TIME REQUIRED FOR CIRCUIT CURRENT OR COMPONENT VOLTAGES TO REACH SPECIFIC VALUES FOR RC OR LR CIRCUITS	13	15	8	
D 237 02-09 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE COMPONENT VALUES REQUIRED FOR CIRCUIT CURRENT AND COMPONENT VOLTAGES TO REACH SPECIFIC VALUES IN SPECIFIC TIMES	12	13	8	
D 238 02-10 DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT IN LR CIRCUITS REACHES ITS MINIMUM VALUE (OR ZERO) AFTER FIVE (5) TIME CONSTANTS	18	19	14	
D 239 03-01 DO YOU WORK WITH CIRCUITS USED AS FILTERS IN YOUR PRESENT JOB	84	85	81	FILTERS
D 240 03-02 DO YOU INSPECT FILTER CIRCUITS	83	85	79	
D 241 03-03 DO YOU CLEAN FILTER CIRCUITS	71	72	67	
D 242 03-04 DO YOU ALIGN OR ADJUST FILTER CIRCUITS	72	74	65	
D 243 03-05 DO YOU TROUBLESHOOT TO THE FILTER CIRCUIT LEVEL	80	81	76	
D 244 03-06 DO YOU TROUBLESHOOT TO COMPONENT PARTS	77	80	69	
D 245 03-07 DO YOU REMOVE OR REPLACE THE COMPLETE FILTER CIRCUIT PARTS	79	80	76	
D 246 03-08 DO YOU REMOVE OR REPLACE FILTER CIRCUIT COMPONENT PARTS	74	77	68	
D 247 03-09 DO YOU WORK WITH LOW PASS FILTERS	81	82	77	
D 248 03-10 DO YOU WORK WITH HIGH PASS FILTERS	77	78	71	
D 249 03-11 DO YOU WORK WITH BANDPASS FILTERS	82	83	74	
D 250 03-12 DO YOU WORK WITH BAND-REJECT FILTERS	67	67	64	
D 251 03-13 DON'T REMEMBER WHICH TYPE OF FILTER YOU WORK WITH	16	17	13	
D 252 03-14 DO YOU WORK WITH L-SECTION FILTER CONFIGURATION	87	58	58	
D 253 03-15 DO YOU WORK WITH T-SECTION FILTER CONFIGURATION	87	57	56	
D 254 03-16 DO YOU WORK WITH PI-SECTION FILTER CONFIGURATION	95	47	40	
D 255 03-17 DON'T REMEMBER WHICH TYPE FILTER CONFIGURATION	26	26	24	
D 256 03-18 DO THE FILTERS YOU WORK WITH USE PARALLEL RESONANT CIRCUITS	60	62	51	
D 257 03-19 DO THE FILTERS YOU WORK WITH USE SERIES-PARALLEL CIRCUITS	61	63	54	
D 258 03-20 DO THE FILTERS YOU WORK WITH USE SERIES RESONANT CIRCUITS	61	63	52	

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		SPC		SPC		SPC	
		126	127	126	127	126	127
D 259 03-21 DON'T REMEMBER WHICH TYPE OF BASIC CIRCUIT		27	26	31			
D 260 03-22 DO YOU USE EQUATIONS OR FORMULAS TO DETERMINE		12	13	6			
CAPACITANCE OR INDUCTANCE VALUES REQUIRED FOR SPECIFIC							
FILTERS							
E 261 E1-01 DO YOU WORK WITH COUPLING DEVICES IN YOUR PRESENT JOB		63	63	80			
E 262 E1-02 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO		78	80	73			
THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH RC							
COUPLING							
E 263 E1-03 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO		74	75	69			
THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH							
IMPEDANCE COUPLING							
E 264 E1-04 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO		81	82	77			
THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH							
TRANSFORMER COUPLING							
E 265 E1-05 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS		77	78	73			
WHICH PERFORM RC COUPLING							
E 266 E1-06 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS		74	75	69			
WHICH PERFORM IMPEDANCE COUPLING							
E 267 E1-07 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS		78	79	76			
WHICH PERFORM TRANSFORMER COUPLING							
E 268 E1-08 DO YOU WORK WITH DIRECTLY COUPLED CIRCUITS		74	76	68			
E 269 E1-09 DO YOU WORK WITH CAPACITIVE-RESISTIVE COUPLED		72	73	67			
CIRCUITS							
E 270 E1-10 DO YOU WORK WITH CAPACITIVE-INDUCTIVE COUPLED		68	71	61			
CIRCUITS							
E 271 E1-11 DO YOU WORK WITH TRANSFORMER COUPLED CIRCUITS		76	77	73			
E 272 E1-12 DON'T REMEMBER WHICH TYPE OF COUPLING CIRCUITS		17	16	19			
E 273 E2-01 IN YOUR PRESENT JOB, DO YOU PERFORM SOLDERING		92	92	93			
TECHNIQUES OR INSPECT OR EVALUATE SOLDERED CONNECTIONS							
E 274 E2-02 DO YOU SELECT TYPE OF SOLDER TO USE		77	77	79			
E 275 E2-03 DO YOU ADD FLUX TO CONNECTIONS		88	88	88			
E 276 E2-04 DO YOU CLEAN CONNECTIONS USING SOLVENTS		83	84	81			
E 277 E2-05 DO YOU STRIP INSULATION FROM WIRES		94	94	93			
E 278 E2-06 DO YOU CONNECT OR DISCONNECT HEAT SINKS		90	92	87			
E 279 E2-07 DO YOU BEND OR SHAPE WIRES OR LEADS		94	94	93			
E 280 E2-08 DO YOU CUT WIRES		94	94	93			
E 281 E2-09 DO YOU FILE OR SHAPE SOLDERING IRON TIPS		79	80	76			
E 282 E2-10 DO YOU TIN SOLDERING IRON TIPS		93	93	92			
E 283 E2-11 DO YOU CLEAN SOLDERING IRON TIPS		94	94	92			
E 284 E2-12 DO YOU CLEAN ELECTRICAL SURFACES USING ERASERS		88	89	85			
E 285 E2-13 DO YOU TIN OR PRE-TIN CONDUCTORS		93	94	90			
E 286 E2-14 DO YOU INSPECT SOLDERED CONNECTIONS		93	93	93			
E 287 E2-15 DO YOU DESOLDER CONNECTIONS BY WICKING		72	73	69			
E 288 E2-16 DO YOU DESOLDER CONNECTIONS USING VACUUM DESOLDERING		88	89	87			
TOOLS							
E 289 E2-17 DO YOU CUT COMPONENT LEADS TO REMOVE COMPONENTS		73	73	74			
E 290 E2-18 DO YOU CRUSH COMPONENTS FOR REMOVAL		30	30	30			

COUPLING

SOLDERING

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK

SPC SPC SPC
126 127 128

E 291 E2-19 DO YOU MAKE HARDWIRE CONNECTIONS
E 292 E2-20 DO YOU MAKE PRINTED CIRCUIT BOARD CONNECTIONS
E 293 E2-21 DO YOU SOLDER PASSIVE COMPONENTS SUCH AS RESISTORS OR CAPACITORS ON PRINTED CIRCUIT BOARDS
E 294 E2-22 DO YOU SOLDER ACTIVE COMPONENTS SUCH AS SOLID-STATE DIODES OR TRANSISTORS ON PRINTED CIRCUIT BOARDS

E 295 E3-01 DO YOU WORK WITH RELAYS ON YOUR PRESENT JOB
E 296 E3-02 DO YOU ADJUST RELAYS
E 297 E3-03 DO YOU CLEAN RELAYS
E 298 E3-04 DO YOU INSPECT RELAYS
E 299 E3-05 DO YOU REMOVE OR REPLACE COMPLETE RELAYS
E 300 E3-06 DO YOU REMOVE OR REPLACE PARTS OR RELAYS
E 301 E3-07 DO YOU TROUBLESHOOT RELAYS
E 302 E3-08 DO YOU STRAIGHTEN RELAY CONTACTS
E 303 E3-09 DO YOU PERFORM TASKS ON RELAY CONTACTS
E 304 E3-10 DO YOU PERFORM TASKS ON RELAY COILS
E 305 E3-11 DO YOU PERFORM TASKS ON RELAY COILS
E 306 E3-12 DO YOU PERFORM TASKS ON RELAY ARMATURES
E 307 E3-13 DO YOU PERFORM TASKS ON RELAY SPRINGS
E 308 E3-14 DO YOU USE OR REFER TO SINGLE POLE, SINGLE THROW (SPST), NORMALLY OPEN (NO) SCHEMATIC SYMBOLS FOR RELAYS
E 309 E3-15 DO YOU USE OR REFER TO SINGLE POLE, SINGLE THROW (SPST), NORMALLY CLOSED (NC) SCHEMATIC SYMBOLS FOR RELAYS
E 310 E3-16 DO YOU USE OR REFER TO SINGLE POLE, DOUBLE THROW (SPDT) SCHEMATIC SYMBOLS FOR RELAYS
E 311 E3-17 DO YOU USE OR REFER TO DOUBLE POLE, DOUBLE THROW (DPDT) SCHEMATIC SYMBOLS FOR RELAYS
E 312 E3-18 DO YOU USE OR REFER TO OTHER RELAY SYMBOLS SCHEMATIC SYMBOLS FOR RELAYS
E 313 E3-19 DO YOU CHECK ELECTRICAL CONTINUITY OF COILS BY MEASURING RESISTANCE

F 314 F1-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS DEALING WITH MICROPHONES
F 315 F1-02 DO YOU INSPECT MICROPHONES
F 316 F1-03 DO YOU CLEAN MICROPHONES
F 317 F1-04 DO YOU OPERATE MICROPHONES
F 318 F1-05 DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS BUT DO NOT TROUBLESHOOT DOWN TO COMPONENT PARTS OR MICROPHONES
F 319 F1-06 DO YOU TROUBLESHOOT DOWN TO MICROPHONE PARTS
F 320 F1-07 DO YOU REMOVE OR REPLACE COMPLETE MICROPHONES
F 321 F1-08 DO YOU REMOVE OR REPLACE MICROPHONE PARTS
F 322 F1-09 DO YOU PERFORM TASKS ON CARBON MICROPHONES
F 323 F1-10 DO YOU PERFORM TASKS ON CAPACITOR MICROPHONES
F 324 F1-11 DO YOU PERFORM TASKS ON CRYSTAL MICROPHONES
F 325 F1-12 DO YOU PERFORM TASKS ON DYNAMIC MICROPHONES
F 326 F1-13 DO YOU PERFORM TASKS ON VELOCITY RIBBON MICROPHONES

RELAYS

MICROPHONES

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

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TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

DY-TSK

	SPC	SPC	SPC
	126	127	129
6 361 61-08 DO YOU USE OR REFER TO THE GENERAL RULE THAT TEMPERATURE CAN AFFECT THE OPERATION OF DIODES	62	63	58
6 362 61-09 DO YOU IDENTIFY SEMICONDUCTOR DIODES AS OPPOSED TO OTHER ELECTRONIC COMPONENTS, SUCH AS RESISTORS, BASED ON THEIR PHYSICAL APPEARANCE	77	77	79
6 363 61-10 DO YOU REFER TO OR DO YOU DETERMINE THE GENERAL EFFECTS OF DOPING ON CURRENT FLOW	14	13	14
6 364 61-11 DO YOU USE OR REFER TO MEASUREMENTS OF FORWARD BIAS RESISTANCE	73	72	74
6 365 61-12 DO YOU USE OR REFER TO DIODE COLOR CODING	42	44	37
6 366 61-13 DO YOU USE OR REFER TO CENTRIFUGAL FORCE OF AN ELECTRON IN ORBIT AROUND A NUCLEUS	3	3	4
6 367 61-14 DO YOU USE OR REFER TO CENTRIPETAL FORCE OF AN ELECTRON IN ORBIT AROUND A NUCLEUS	3	3	4
6 368 61-15 DO YOU USE OR REFER TO DIODE NUMBERING SYSTEM, SUCH AS IN 938	73	73	71
6 369 61-16 DO YOU USE OR REFER TO KINETIC ENERGY OF AN ELECTRON MOVING IN ORBIT	3	3	4
6 370 61-17 DO YOU USE OR REFER TO POTENTIAL ENERGY OF AN ELECTRON MOVING IN ORBIT	4	4	5
6 371 61-18 DO YOU USE OR REFER TO MEASUREMENTS OF REVERSE BIAS RESISTANCE	69	68	71
6 372 61-19 DO YOU USE OR REFER TO NUMBER OF ELECTRONS IN A PARTICULAR SHELL OR ORBIT	3	4	1
6 373 61-20 DO YOU USE OR REFER TO PERMISSIBLE ENERGY LEVELS OF AN ORBITING ELECTRON	3	4	1
6 374 61-21 DO YOU USE OR REFER TO FORBIDDEN ENERGY LEVELS OF AN ORBITING ELECTRON	2	3	1
6 375 61-22 DO YOU USE OR REFER TO VALENCE ELECTRONS (THOSE IN THE OUTERMOST SHELL)	3	4	2
6 376 61-23 DO YOU USE OR REFER TO ATOMIC NUMBER (TOTAL NUMBER OF ELECTRONS IN ATOM)	3	4	1
6 377 61-24 DO YOU USE OR REFER TO SYMBOLS ON THE DIODE WHICH INDICATE THE CATHODE END	79	79	77
6 378 61-25 DO YOU NEED TO KNOW WHICH MATERIALS ARE USED IN THE CONSTRUCTION OF DIODES SUCH AS GERMANIUM OR SILICON	17	20	11
6 379 61-26 DO YOU NEED TO KNOW THAT SEMICONDUCTORS HAVE NEGATIVE TEMPERATURE COEFFICIENTS OF RESISTANCE (AS TEMPERATURE INCREASES RESISTANCE DECREASES)	34	38	23
6 380 61-27 DO YOU USE OR REFER TO PN JUNCTION DIODE CHARACTERISTIC CURVES, SUCH AS VOLTAGE - CURRENT CHARACTERISTIC CURVES (PERHAPS YOU DO THIS TO IDENTIFY POINTS OF STRUCTURAL BREAKDOWN OR OPERATING REGIONS)	14	15	11
6 381 61-28 DO YOU DETERMINE WHETHER PN JUNCTION DIODES ARE FORWARD BIASED OR REVERSE BIASED WHEN YOU READ OR INTERPRET CIRCUIT DIAGRAMS	62	62	63
6 382 61-29 DO YOU USE OR REFER TO VALENCE BAND IN SEMICONDUCTOR MATERIALS	5	7	1

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

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TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

DY-TSK

SPC SPC SPC
126 127 128

6 383	61-30 DO YOU USE OR REFER TO FORBIDDEN BAND IN SEMICONDUCTOR MATERIALS	4	5	1
6 384	61-31 DO YOU USE OR REFER TO CONDUCTION BAND IN SEMICONDUCTOR MATERIALS	6	7	1
6 385	61-32 DO YOU USE OR REFER TO COVALENT BONDING IN SEMICONDUCTOR MATERIALS	4	5	1
6 386	61-33 DO YOU USE OR REFER TO ELECTRON-HOLE PAIR CREATED IN SEMICONDUCTORS	6	8	2
6 387	61-34 DO YOU USE OR REFER TO ELECTRON FLOW OR HOLE FLOW IN SEMICONDUCTORS	21	22	19
6 388	61-35 DO YOU USE OR REFER TO DONOR IMPURITY IN SEMICONDUCTORS	5	7	1
6 389	61-36 DO YOU USE OR REFER TO ACCEPTOR IMPURITY IN SEMICONDUCTORS	5	6	1
6 390	61-37 DO YOU USE OR REFER TO P-TYPE SEMICONDUCTOR MATERIAL	31	32	27
6 391	61-38 DO YOU USE OR REFER TO N-TYPE SEMICONDUCTOR MATERIAL	31	32	27
6 392	61-39 DO YOU USE OR REFER TO MAJORITY CARRIERS IN SEMICONDUCTORS	8	10	4
6 393	61-40 DO YOU USE OR REFER TO MINORITY CARRIERS IN SEMICONDUCTORS	8	10	4
6 394	61-41 DO YOU USE OR REFER TO JUNCTION RECOMBINATION IN SEMICONDUCTORS	6	7	2
6 395	61-42 DO YOU USE OR REFER TO DEPLETION REGION IN SEMICONDUCTORS	7	9	1
6 396	61-43 DO YOU USE OR REFER TO RELATIONSHIP BETWEEN BARRIER WIDTH AND DIFFERENCE OF POTENTIAL	9	11	1
6 397	61-44 DO YOU USE OR REFER TO THE 10:1 BACK TO FRONT RESISTANCE RATIO FOR DIODES	77	77	80
6 398	61-45 DO YOU USE OR REFER TO BARRIER HEIGHT IN SEMICONDUCTORS	7	8	2
6 399	61-46 DO YOU USE OR REFER TO DIODE SUBSTITUTION INFORMATION	48	46	54
6 400	61-47 DO YOU USE OR REFER TO MAXIMUM AVERAGE FORWARD CURRENT DIODE RATINGS	22	25	14
6 401	61-48 DO YOU USE OR REFER TO PEAK RECURRENT FORWARD CURRENT DIODE RATINGS	18	20	12
6 402	61-49 DO YOU USE OR REFER TO MAXIMUM SURGE CURRENT DIODE RATINGS	21	23	15
6 403	61-50 DO YOU USE OR REFER TO PEAK REVERSE (INVERSE) VOLTAGE DIODE RATINGS	29	32	19
6 404	62-01 DO YOU WORK WITH TRANSISTORS IN YOUR PRESENT JOB.	86	87	83
6 405	62-02 DO YOU INSPECT TRANSISTORS	86	86	85
6 406	62-03 DO YOU REMOVE OR REPLACE TRANSISTORS	86	87	83
6 407	62-04 DO YOU CHECK TRANSISTORS USING AN INSTRUMENT	82	83	80
6 408	62-05 DO YOU USE OR REFER TO EMITTER - BASE (EB) FORWARD AND REVERSE RESISTANCE MEASUREMENTS	77	77	79
6 409	62-06 DO YOU USE OR REFER TO COLLECTOR - BASE (CB) FORWARD AND REVERSE RESISTANCE MEASUREMENTS	77	77	79

TRANSISTORS

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

GPSUM7 PAGE 14

TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

0Y-TSK

SPC SPC SPC
126 127 128

6 410 62-07 DO YOU USE OR REFER TO EMITTER - COLLECTOR (EC) RESISTANCE MEASUREMENTS
6 411 62-08 DO YOU USE OR REFER TO HOW BIASING AFFECTS THE PHYSICAL BARRIER WIDTH OF THE EMITTER - BASE JUNCTION
6 412 62-09 DO YOU USE OR REFER TO HOW BIASING AFFECTS THE PHYSICAL BARRIER WIDTH OF THE COLLECTOR - BASE JUNCTION
6 413 62-10 DO YOU USE OR REFER TO THE PHYSICAL SIZE OF THE TRANSISTOR STRUCTURE (COLLECTOR, BASE AND EMITTER)
6 414 62-11 DO YOU USE OR REFER TO LEAKAGE CURRENT (ICBO) IN A TRANSISTOR
6 415 62-12 DO YOU USE OR REFER TO TRANSISTOR SCHEMATIC SYMBOLS
6 416 62-13 DO YOU USE OR REFER TO TRANSISTOR NOTATION SUCH AS 91, 92, 93, ETC
6 417 62-14 DO YOU USE OR REFER TO TRANSISTOR SUBSTITUTION INFORMATION
6 418 62-15 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE TRANSISTOR BASE CURRENT IS NORMALLY SIGNIFICANTLY SMALLER THAN THE EMITTER CURRENT IE (USUALLY IS BEING 2 TO 8 PERCENT OF IE)
6 419 62-16 DO YOU USE THE INFORMATION THAT THE EFFECT OF EMITTER BASE VOLTAGE ON BASE CURRENT IS THE CONTROLLING FACTOR FOR TRANSISTORS
6 420 62-17 DO YOU USE THE GENERAL RULE THAT LEAKAGE CURRENT (ICBO) IN A TRANSISTOR INCREASES AS TEMPERATURE INCREASES
6 421 62-18 DO YOU USE OR REFER TO TRANSISTOR CHARACTERISTIC CURVES
6 422 62-19 DO YOU USE OR REFER TO BETA TRANSISTOR GAINS
6 423 62-20 DO YOU USE OR REFER TO ALPHA TRANSISTOR GAINS
6 424 62-21 DO YOU USE OR REFER TO GAMMA TRANSISTOR GAINS
6 425 62-22 DO YOU CALCULATE BETA TRANSISTOR GAINS
6 426 62-23 DO YOU CALCULATE ALPHA TRANSISTOR GAINS
6 427 62-24 DO YOU CALCULATE GAMMA TRANSISTOR GAINS
6 428 62-01 DO YOU WORK WITH TRANSISTOR AMPLIFIERS IN YOUR PRESENT JOB
6 429 63-02 DO YOU INSPECT TRANSISTOR AMPLIFIERS
6 430 63-03 DO YOU ALIGN OR ADJUST TRANSISTOR AMPLIFIERS
6 431 63-04 DO YOU TROUBLESHOOT TO THE AMPLIFIER CIRCUIT LEVEL
6 432 63-05 DO YOU TROUBLESHOOT TO AMPLIFIER COMPONENTS
6 433 63-06 DO YOU REMOVE OR REPLACE THE COMPLETE AMPLIFIER
6 434 63-07 DO YOU REMOVE OR REPLACE AMPLIFIER COMPONENTS
6 435 63-08 DO YOU USE OR REFER TO (COMMON EMITTER) THE CHANGE IN COLLECTOR CURRENT WHICH RESULTS FROM A CHANGE IN BASE CURRENT
6 436 63-09 DO YOU USE OR REFER TO (COMMON EMITTER) THE CALCULATIONS NECESSARY TO MEASURE THE SPECIFIC CHANGE IN COLLECTOR CURRENT WHICH RESULTS FROM A SPECIFIC CHANGE IN BASE CURRENT

TRANSISTOR
AMPLIFIERS

76 77 76
26 28 19
25 27 19
47 48 43
24 28 20
85 85 83
86 86 85
58 57 63
34 36 29
46 48 39
23 25 15
13 15 8
14 15 8
13 14 7
10 12 5
5 6 4
5 6 2
4 5 2
76 78 73
78 78 77
71 72 69
77 77 75
74 74 73
72 72 70
71 71 70
32 33 27
16 17 13

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK

	SPC	SPC	SPC
	126	127	128
6 437 G3-10 DO YOU USE OR REFER TO (COMMON EMITTER) THE CHANGE IN COLLECTOR VOLTAGE WHICH RESULTS FROM A CHANGE IN BASE CURRENT	32	33	30
6 438 G3-11 DO YOU USE OR REFER TO (COMMON EMITTER) THE CALCULATIONS NECESSARY TO MEASURE THE SPECIFIC CHANGE IN COLLECTOR VOLTAGE WHICH RESULTS FROM A SPECIFIC CHANGE IN BASE CURRENT	14	15	11
6 439 G3-12 DO YOU USE OR REFER TO (COMMON EMITTER) THE CHANGE IN BASE CURRENT WHICH RESULTS FROM AN INPUT SIGNAL	33	34	30
6 440 G3-13 DO YOU USE OR REFER TO (COMMON EMITTER) THE CALCULATIONS NECESSARY TO MEASURE THE SPECIFIC CHANGE IN BASE CURRENT WHICH RESULTS FROM A SPECIFIC INPUT SIGNAL	16	18	8
6 441 G3-14 DO YOU USE THE LOAD-LINE METHOD OF ANALYSIS IN YOUR CIRCUIT ANALYSIS (THIS METHOD REQUIRES YOU TO PLOT A LOAD-LINE ON A TRANSISTOR CHARACTERISTIC CURVE)	6	7	5
6 442 G3-15 DO YOU USE OR REFER TO THE OPERATING POINT Q (QUIESCENT POINT) FOR A TRANSISTOR	18	20	12
6 443 G3-16 DO YOU CALCULATE THE SPECIFIC QUIESCENT POINT FOR A PARTICULAR TRANSISTOR	6	7	2
6 444 G3-17 DO YOU MEASURE VOLTAGE GAIN USED IN THE COMMON EMITTER CONFIGURATION	55	55	54
6 445 G3-18 DO YOU MEASURE CURRENT GAIN USED IN THE COMMON EMITTER CONFIGURATION	42	43	39
6 446 G3-19 DO YOU MEASURE POWER GAIN USED IN THE COMMON EMITTER CONFIGURATION	43	44	42
6 447 G3-20 DO YOU CALCULATE THE VOLTAGE GAIN FOR SPECIFIC TRANSISTORS USING A FORMULA THAT IS, DO YOU DIVIDE THE CHANGE IN BASE-EMITTER VOLTAGE INTO THE CHANGE THE BASE COLLECTOR VOLTAGE TO DETERMINE THE VOLTAGE GAIN	9	10	4
6 448 G3-21 DO YOU CALCULATE THE CURRENT GAIN FOR SPECIFIC TRANSISTORS USING A FORMULA THAT IS, DO YOU DIVIDE THE CHANGE IN BASE CURRENT INTO THE CHANGE IN COLLECTOR CURRENT TO DETERMINE THE CURRENT GAIN	8	9	4
6 449 G3-22 DO YOU CALCULATE THE POWER GAIN FOR A SPECIFIC TRANSISTOR USING A FORMULA THAT IS, DO YOU MULTIPLY THE CURRENT GAIN TIMES THE VOLTAGE GAIN TO DETERMINE THE POWER GAIN	7	8	4
6 450 G3-23 DO YOU NEED TO KNOW THAT MORE COLLECTOR CURRENT IS GENERATED WITH LESS COLLECTOR VOLTAGE AS TEMPERATURE INCREASES (THIS AFFECTS THE STATIC OPERATING POINT Q _Q OF THE TRANSISTOR)	17	20	8
6 451 G3-24 DO YOU COMPUTE THE STATIC OPERATING POINT Q _Q OF A TRANSISTOR AT DIFFERENT TEMPERATURES	6	7	5
6 452 G3-25 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH EMITTER (SWAMPING) RESISTOR STABILIZATION	42	43	37
6 453 G3-26 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH SELF-BIAS STABILIZATION	41	43	33

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

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DY-TSK

	SPC	SPC	SPC
	126	127	128
6 454 63-27 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH THERMISTOR STABILIZATION	40	42	35
6 455 63-28 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH FORWARD BIAS DIODE STABILIZATION	42	43	38
6 456 63-29 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH REVERSE BIAS DIODE STABILIZATION	42	44	38
6 457 63-30 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH DOUBLE DIODE STABILIZATION	36	37	35
6 458 63-31 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM EMITTER (SWAMPING) RESISTOR STABILIZATION	51	55	42
6 459 63-32 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM SELF-BIAS STABILIZATION	50	54	38
6 460 63-33 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM THERMISTOR STABILIZATION	51	54	40
6 461 63-34 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM FORWARD BIAS DIODE STABILIZATION	51	54	42
6 462 63-35 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM REVERSE BIAS DIODE STABILIZATION	51	53	42
6 463 63-36 DO YOU TROUBLESHOOT CIRCUITS WHICH HAVE COMPONENTS WHICH PERFORM DOUBLE DIODE STABILIZATION	44	47	37
6 464 63-37 DO YOU IDENTIFY AMPLITUDE DISTORTION FOR TRANSISTOR CIRCUITS	56	57	52
6 465 63-38 DO YOU TROUBLESHOOT TRANSISTOR CIRCUITS TO FIND THE CAUSES OF AMPLITUDE DISTORTION	59	60	55
6 466 63-39 DO YOU IDENTIFY FREQUENCY DISTORTION FOR TRANSISTOR CIRCUITS	54	56	49
6 467 63-40 DO YOU IDENTIFY PHASE DISTORTION FOR TRANSISTOR CIRCUITS	47	48	42
6 468 63-41 DO YOU TROUBLESHOOT TRANSISTOR CIRCUITS TO FIND THE CAUSES OF PHASE DISTORTION	45	47	39
6 469 63-42 DO YOU TROUBLESHOOT TRANSISTOR CIRCUITS TO FIND THE CAUSES OF FREQUENCY DISTORTION	51	53	46
6 470 63-43 DO YOU NEED TO KNOW THE DEGENERATIVE EFFECTS ON THE CIRCUIT CAUSED BY CHANGING EMITTER RESISTANCE FOR TRANSISTOR AMPLIFIERS IN THE COMMON COLLECTOR CONFIGURATION	23	24	19
6 471 63-44 DO YOU DETERMINE THE CLASS OF OPERATION FOR AMPLIFIERS IN ORDER TO TROUBLESHOOT AMPLIFIER CIRCUITS	27	29	21
6 472 63-45 DO YOU TROUBLESHOOT OR REPAIR PARAPHASE AMPLIFIERS	54	56	50
6 473 63-46 DO YOU TROUBLESHOOT OR REPAIR PUSH-PULL AMPLIFIERS	71	73	63
6 474 63-47 DO YOU TROUBLESHOOT OR REPAIR COMPLEMENTARY SYMMETRY CIRCUITS	51	54	43
6 475 63-48 DO YOU TROUBLESHOOT OR REPAIR COMPOUND-CONNECTED AMPLIFIERS	56	58	50

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

0Y-TSK

SPC SPC SPC
126 127 128

G 476 G3-49 DO YOU TROUBLESHOOT OR REPAIR CASCADE-CONNECTED

AMPLIFIERS

SOLID-STATE
SPECIAL PURPOSE
DEVICES

H 477 H1-01 DO YOU USE OR REFER TO VARACTORS

H 478 H1-02 DO YOU USE OR REFER TO TUNNEL DIODES

H 479 H1-03 DO YOU USE OR REFER TO FIELD EFFECT TRANSISTORS (FET)

H 480 H1-04 DO YOU USE OR REFER TO UNIJUNCTION TRANSISTORS

H 481 H1-05 DO YOU USE OR REFER TO ZENER DIODES

H 482 H1-06 DO YOU USE OR REFER TO INTEGRATED CIRCUITS

H 483 H2-01 IN YOUR PRESENT JOB, DO YOU WORK WITH POWER SUPPLIES

H 484 H2-02 DO YOU INSPECT POWER SUPPLIES

H 485 H2-03 DO YOU CLEAN POWER SUPPLIES

H 486 H2-04 DO YOU ALIGN OR ADJUST POWER SUPPLIES

H 487 H2-05 DO YOU TROUBLESHOOT TO POWER SUPPLY CIRCUIT LEVEL

H 488 H2-06 DO YOU TROUBLESHOOT TO POWER SUPPLY COMPONENTS

H 489 H2-07 DO YOU REMOVE OR REPLACE COMPLETE POWER SUPPLIES

H 490 H2-08 DO YOU REMOVE OR REPLACE POWER SUPPLY COMPONENTS

H 491 H2-09 DO YOU WORK WITH HALF-WAVE RECTIFIERS

H 492 H2-10 DO YOU WORK WITH FULL-WAVE RECTIFIERS OTHER THAN

BRIDGE RECTIFIERS

H 493 H2-11 DO YOU WORK WITH BRIDGE RECTIFIERS

H 494 H2-12 DO YOU WORK WITH THREE-PHASE RECTIFIERS

H 495 H2-13 DO YOU USE OR REFER TO INPUT VOLTAGE

H 496 H2-14 DO YOU USE OR REFER TO INPUT FREQUENCY

H 497 H2-15 DO YOU USE OR REFER TO PEAK OUTPUT VOLTAGE

H 498 H2-16 DO YOU USE OR REFER TO AVERAGE OUTPUT VOLTAGE

H 499 H2-17 DO YOU USE OR REFER TO RIPPLE AMPLITUDE

H 500 H2-18 DO YOU USE OR REFER TO RIPPLE FREQUENCY

H 501 H2-19 DO YOU USE OR REFER TO PEAK REVERSE (INVERSE) VOLTAGE

H 502 H2-20 DO YOU USE OR REFER TO SHAPE OF OUTPUT WAVEFORMS

H 503 H2-21 DO YOU USE OR REFER TO EFFECTIVE OUTPUT VOLTAGE

H 504 H2-22 DO YOU WORK WITH CIRCUITS WHICH EMPLOY CAPACITIVE

FILTERS

H 505 H2-23 DO YOU WORK WITH CIRCUITS WHICH EMPLOY INDUCTIVE

FILTERS

H 506 H2-24 DO YOU WORK WITH CIRCUITS WHICH EMPLOY CAPACITIVE

INPUT L-TYPE FILTERS

H 507 H2-25 DO YOU WORK WITH CIRCUITS WHICH EMPLOY INDUCTIVE

INPUT L-TYPE FILTERS

H 508 H2-26 DO YOU WORK WITH CIRCUITS WHICH EMPLOY LC PI-TYPE

FILTERS

H 509 H2-27 DO YOU WORK WITH CIRCUITS WHICH EMPLOY RC PI-TYPE

FILTERS

H 510 H2-28 DO YOU WORK WITH CIRCUITS WHICH EMPLOY DON'T

REMEMBER WHICH TYPE OF FILTER

H 511 H2-29 DO YOU HAVE THE OPTION OF REPLACING ONE TYPE OF

FILTER WITH A DIFFERENT TYPE FILTER

H 512 H3-01 DO YOU WORK WITH OSCILLATORS IN YOUR PRESENT JOB

OSCILLATORS

80 80 80

8

PCT MBS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

	SPC	SPC	SPC
	126	127	128
DY-TSK			
M 513 H3-02 DO YOU INSPECT OSCILLATORS	80	80	81
M 514 H3-03 DO YOU ALIGN OR ADJUST OSCILLATORS	77	78	76
M 515 H3-04 DO YOU REMOVE OR REPLACE COMPLETE OSCILLATORS	76	75	76
M 516 H3-05 DO YOU REMOVE OR REPLACE OSCILLATOR COMPONENTS	72	75	65
M 517 H3-06 DO YOU TROUBLESHOOT TO OSCILLATOR CIRCUIT LEVEL	77	78	75
M 518 H3-07 DO YOU TROUBLESHOOT TO OSCILLATOR COMPONENTS	72	74	68
M 519 H3-08 DO YOU USE OR REFER TO FEEDBACK	66	67	63
M 520 H3-09 DO YOU USE OR REFER TO FREQUENCY DETERMINING DEVICES (FDD)	59	60	58
M 521 H3-10 DO YOU USE OR REFER TO AMPLITUDE STABILITY	55	57	51
M 522 H3-11 DO YOU USE OR REFER TO FREQUENCY STABILITY	63	64	62
M 523 H3-12 DO YOU USE OR REFER TO DAMPING	49	49	49
M 524 H3-13 DO YOU USE OR REFER TO REGENERATIVE FEEDBACK	61	62	61
M 525 H3-14 DO YOU USE OR REFER TO PIEZOELECTRIC EFFECT	32	34	27
M 526 H3-15 DO YOU USE OR REFER TO CRITICAL DAMPING	30	30	27
M 527 H3-16 DO YOU USE OR REFER TO UNDER DAMPING	32	32	32
M 528 H3-17 DO YOU USE OR REFER TO OVER DAMPING	32	32	32
M 529 H3-18 DO YOU WORK WITH OSCILLATORS WHICH USE LC TANK CIRCUITS AS FDD	57	57	56
M 530 H3-19 DO YOU WORK WITH OSCILLATORS WHICH USE RC NETWORKS AS FDD	67	69	62
M 531 H3-20 DO YOU WORK WITH OSCILLATORS WHICH USE CRYSTALS AS FDD	71	72	70
M 532 H3-21 DO YOU WORK WITH OSCILLATORS WHICH USE DON'T REMEMBER WHICH TYPE OF FDD	18	18	19
M 533 H3-22 DO YOU WORK WITH SERIES HARTLEY SINUSOIDAL OSCILLATORS	56	58	51
M 534 H3-23 DO YOU WORK WITH SHUNT HARTLEY SINUSOIDAL OSCILLATORS	55	56	50
M 535 H3-24 DO YOU WORK WITH COLPITTS SINUSOIDAL OSCILLATORS	57	58	51
M 536 H3-25 DO YOU WORK WITH CLAPP SINUSOIDAL OSCILLATORS	38	40	31
M 537 H3-26 DO YOU WORK WITH BUTLER SINUSOIDAL OSCILLATORS	40	42	33
M 538 H3-27 DO YOU WORK WITH DON'T REMEMBER WHICH TYPE OF OSCILLATORS	30	30	32
I 539 I1-01 DO YOU WORK WITH MULTIVIBRATORS IN YOUR PRESENT JOB	74	75	70
I 540 I1-02 DO YOU INSPECT WAVE GENERATING OR SHAPING CIRCUITS	71	72	70
I 541 I1-03 DO YOU ALIGN OR ADJUST WAVE GENERATING OR SHAPING CIRCUITS	69	69	68
I 542 I1-04 DO YOU CALIBRATE WAVE GENERATING OR SHAPING CIRCUITS	59	60	56
I 543 I1-05 DO YOU TROUBLESHOOT TO WAVE GENERATING OR SHAPING CIRCUITS	71	72	69
I 544 I1-06 DO YOU TROUBLESHOOT TO WAVE GENERATING OR SHAPING CIRCUIT COMPONENTS	67	67	67
I 545 I1-07 DO YOU REMOVE OR REPLACE COMPLETE WAVE GENERATING OR SHAPING CIRCUITS	68	68	67
I 546 I1-08 DO YOU REMOVE OR REPLACE WAVE GENERATING OR SHAPING COMPONENTS	66	67	62
I 547 I1-09 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN LC TANK CIRCUITS	61	63	56

MULTIVIBRATORS

PCT MBSRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK

SPC SPC SPC
126 127 128

I 548 11-10 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN RC
NETWORKS
I 549 11-11 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN
CRYSTALS
I 550 11-12 DO YOU WORK WITH MULTIVIBRATORS WHICH CONTAIN DON'T
REMEMBER WHICH TYPE OF FDD
I 551 11-13 DO YOU WORK WITH ASTABLE MULTIVIBRATORS
I 552 11-14 DO YOU WORK WITH MONOSTABLE MULTIVIBRATORS
I 553 11-15 DO YOU WORK WITH BISTABLE MULTIVIBRATORS
I 554 11-16 DO YOU WORK WITH DON'T REMEMBER WHICH TYPE
MULTIVIBRATORS

LIMITERS AND
CLAMPERS

I 555 12-01 DO YOU WORK WITH LIMITERS OR CLAMPERS IN YOUR
PRESENT JOB

I 556 12-02 DO YOU WORK WITH SERIES DIODE LIMITERS
I 557 12-03 DO YOU WORK WITH SHUNT DIODE LIMITERS
I 558 12-04 DO YOU WORK WITH LIMITERS WITH BIAS
I 559 12-05 DO YOU WORK WITH ZENER DIODE LIMITERS
I 560 12-06 DO YOU WORK WITH TRANSISTOR LIMITERS
I 561 12-07 DO YOU WORK WITH DON'T KNOW WHICH TYPE OF LIMITERS
I 562 12-08 DO YOU WORK WITH BASIC DIODE CLAMPING CIRCUITS
I 563 12-09 DO YOU WORK WITH DIODE CLAMPING CIRCUITS WITH BIAS
I 564 12-10 DO YOU WORK WITH DON'T KNOW WHICH TYPE OF CLAMPING
CIRCUIT

I 565 13-01 IN YOUR PRESENT JOB, DO YOU WORK ON EQUIPMENT WHICH
CONTAINS ELECTRON TUBES

I 566 13-02 DO YOU CHECK ELECTRON TUBES TO SEE IF THEY ARE GOOD
I 567 13-03 DO YOU USE TUBE TESTERS TO CHECK ELECTRON TUBES
I 568 13-04 DO YOU USE MULTIMETERS TO CHECK ELECTRON TUBES
I 569 13-05 DO YOU USE SCOPES TO CHECK ELECTRON TUBES
I 570 13-06 DO YOU USE SUBSTITUTION TO CHECK ELECTRON TUBES
I 571 13-07 DO YOU USE OR REFER TO CUTOFF
I 572 13-08 DO YOU USE OR REFER TO PEAK INVERSE VOLTAGE RATING
I 573 13-09 DO YOU USE OR REFER TO PEAK CURRENT RATING
I 574 13-10 DO YOU USE OR REFER TO TRANSIT TIME
I 575 13-11 DO YOU USE OR REFER TO PLATE DISSIPATION RATING
I 576 13-12 DO YOU USE OR REFER TO SATURATION
I 577 13-13 DO YOU USE OR REFER TO DC PLATE RESISTANCE
I 578 13-14 DO YOU COMPUTE ACTUAL VALUES OF THE DC PLATE
RESISTANCE FOR ELECTRON TUBES

I 579 13-15 DO YOU USE OR REFER TO PLATE VOLTAGE
I 580 13-16 DO YOU USE OR REFER TO PLATE CURRENT
I 581 13-17 DO YOU USE OR REFER TO GRID VOLTAGE
I 582 13-18 DO YOU USE OR REFER TO GRID CURRENT
I 583 13-19 DO YOU USE OR REFER TO CATHODE VOLTAGE
I 584 13-20 DO YOU USE OR REFER TO CATHODE CURRENT
I 585 13-21 DO YOU USE OR REFER TO THE TRIODE AMPLIFICATION
FACTOR (THE AMPLIFICATION FACTOR FOR TRIODES IS DEFINED AS
THE RATIO OF CHANGE IN PLATE VOLTAGE TO A CHANGE IN GRID
VOLTAGE)

ELECTRON TUBES

87 87 89

82 82 80

76 78 71

63 66 54

77 78 74

82 82 83

57 57 58

24 27 17

26 29 18

22 24 15

20 23 11

56 56 55

31 35 21

8 9 4

78 80 73

61 62 58

75 78 68

59 60 54

76 78 69

59 60 55

22 27 10

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

BY-TSK

	SPC	SPC	SPC
	126	127	128
1 586 13-22 DO YOU CALCULATE ACTUAL VALUES OF TRIODE AMPLIFICATION FACTORS	6	7	2
1 587 13-23 DO YOU USE OR REFER TO MULTIGRID (TETRODE, PENTODE, ETC) AMPLIFICATION FACTORS	22	25	10
1 588 13-24 DO YOU USE OR REFER TO ELECTRON TUBE TRANSCONDUCTANCE (G, WHICH IS MEASURED IN MHOS)	12	14	6
1 589 13-25 DO YOU CALCULATE ACTUAL VALUES OF ELECTRON TUBE TRANSCONDUCTANCES	5	6	1
1 590 13-26 DO YOU USE OR REFER TO THE ELECTRON TUBE PARAMETER CALLED AC PLATE RESISTANCE	14	15	10
1 591 13-27 DO YOU CALCULATE ACTUAL VALUES OF AC PLATE RESISTANCE	6	6	4
1 592 13-28 DO YOU USE OR REFER TO ELECTRON TUBE INTERELECTRODE CAPACITANCE	24	27	13
1 593 13-29 DO YOU USE OR REFER TO CHARACTERISTIC CURVES IN YOUR WORK WITH ELECTRON TUBES	12	14	7
1 594 13-30 DO YOU USE CHARACTERISTIC CURVES TO SELECT PLATE VOLTAGE FOR A SPECIFIED BIAS	12	13	11
1 595 13-31 DO YOU USE CHARACTERISTIC CURVES TO SELECT PLATE CURRENT FOR A SPECIFIED BIAS	11	12	10
1 596 13-32 DO YOU USE CHARACTERISTIC CURVES TO SELECT BIAS REQUIRED FOR CUTOFF	14	17	12
1 597 13-33 DO YOU USE CHARACTERISTIC CURVES TO SELECT BIAS REQUIRED FOR SATURATION	14	17	12
1 598 13-34 DO YOU USE OR REFER TO ELECTRON TUBE AMPLIFIER GAIN	89	40	54
1 599 13-35 DO YOU USE OR REFER TO ELECTRON TUBE AMPLIFIER EFFICIENCY	91	43	36
1 600 13-36 DO YOU USE TEST TUBE CHECKERS TO DETERMINE ELECTRON TUBE AMPLIFIER GAIN	61	63	52
1 601 13-37 DO YOU USE MULTIMETERS TO DETERMINE ELECTRON TUBE AMPLIFIER GAIN	46	48	38
1 602 13-38 DO YOU USE OSCILLOSCOPES TO DETERMINE ELECTRON TUBE AMPLIFIER GAIN	65	67	61
1 603 13-39 DO YOU USE CHARACTERISTIC CURVES TO DETERMINE ELECTRON TUBE AMPLIFIER GAIN	13	15	6
1 604 13-40 DO YOU CALCULATE ANY ELECTRON TUBE CAPACITANCES SUCH AS INPUT CAPACITANCE	10	10	11
1 605 13-41 DO YOU USE OR REFER TO TUBE SOCKET NOTATION	81	83	77
1 606 13-42 DO YOU USE OR REFER TO PIN NUMBERING SYSTEMS	85	85	83
1 607 13-43 DO YOU USE OR REFER TO THE TYPE OF MATERIAL OR THE OPERATING TEMPERATURE OF THE EMITTING SURFACE IN THE ELECTRON TUBES YOU WORK ON	12	12	13
1 608 13-44 DO YOU USE OR REFER TO TUBE SUBSTITUTION MATERIAL SUCH AS MANUALS OR CHARTS	51	49	55
J 609 J1-01 DO YOU WORK WITH ELECTRON TUBE AMPLIFIERS OR CIRCUITS IN YOUR PRESENT JOB	79	81	74
J 610 J1-02 DO YOU DETERMINE THE CLASS OF OPERATION FOR ELECTRON TUBE AMPLIFIERS IN ORDER TO TROUBLESHOOT AMPLIFIER CIRCUITS	33	34	31

ELECTRON TUBE
AMPLIFIERS
AND CIRCUITS

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK		SPC	SPC	SPC
		126	127	128
J 611	J1-03 00 YOU TROUBLESHOOT OR REPAIR PARAPHASE AMPLIFIERS	54	58	51
J 612	J1-04 00 YOU TROUBLESHOOT OR REPAIR PUSH-PULL AMPLIFIERS	69	72	61
J 613	J1-05 00 YOU TROUBLESHOOT OR REPAIR COMPOUND-CONNECTED AMPLIFIERS	54	57	95
J 614	J1-06 00 YOU TROUBLESHOOT OR REPAIR CASCADE-CONNECTED AMPLIFIERS	65	67	56
J 615	J1-07 00 YOU TROUBLESHOOT OR REPAIR DON'T KNOW WHICH TYPE OF AMPLIFIER	25	24	26
J 616	J2-01 00 YOU WORK WITH GAS TUBES (HOT CATHODE OR COLD CATHODE)	69	69	68
J 617	J2-02 00 YOU WORK WITH CATHODE-RAY TUBES	65	66	62
J 618	J2-03 00 YOU USE OR REFER TO THE CHARACTERISTICS OF BEAM POWER TUBES	17	18	13
J 619	J2-04 00 YOU TROUBLESHOOT OR REPAIR CIRCUITS IN WHICH BEAM POWER TUBES ARE USED	28	28	24
J 620	J2-05 00 YOU USE OR REFER TO THE CHARACTERISTICS OF THYRATONS	43	45	39
J 621	J2-06 00 YOU TROUBLESHOOT OR REPAIR CIRCUITS IN WHICH THYRATONS ARE USED	65	65	65
J 622	J2-07 00 YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF ELECTRON GUNS OF CATHODE-RAY TUBES (CRT)	40	40	39
J 623	J2-08 00 YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF ELECTROMAGNETIC DEFLECTION SYSTEMS OF CATHODE-RAY TUBES (CRT)	45	46	40
J 624	J2-09 00 YOU USE OR REFER TO THE PRINCIPLES OF OPERATION OF ELECTROSTATIC DEFLECTION SYSTEMS OF CATHODE-RAY TUBES (CRT)	39	41	35
J 625	J2-10 00 YOU USE OR REFER TO PHOSPHOR SCREENS	39	43	27
J 626	J2-11 00 YOU USE OR REFER TO AQUADAG COATINGS	29	30	27
J 627	J2-12 00 YOU USE OR REFER TO ELECTRON OPTICS	16	18	12
J 628	J2-13 00 YOU USE OR REFER TO PERSISTENCE	33	33	33
J 629	J2-14 00 YOU USE OR REFER TO DECAY TIMES	26	27	23
J 630	J2-15 00 YOU USE OR REFER TO FLUORESCENCE	27	30	18
J 631	J2-16 00 YOU USE OR REFER TO PHOSPHORESCENCE	30	33	20
J 632	J3-01 00 YOU WORK ON TRANSMIT OR RECEIVE SYSTEMS IN YOUR PRESENT JOB	89	89	88
J 633	J3-02 00 YOU PERFORM TASKS ON FREQUENCY CONVERTERS	78	78	77
J 634	J3-03 00 YOU PERFORM TASKS ON FREQUENCY MIXERS	82	83	77
J 635	J3-04 00 YOU USE OR REFER TO THE HETERODYNING OF SIGNALS IN YOUR WORK WITH TRANSMIT OR RECEIVE SYSTEMS	72	75	61
J 636	J3-05 00 YOU PERFORM TASKS ON REACTANCE MODULATORS	44	46	39
J 637	J3-06 00 YOU PERFORM TASKS ON MODULATED OSCILLATORS	68	69	62
K 638	K1-01 00 YOU WORK ON AM TRANSMIT OR RECEIVE SYSTEMS IN YOUR PRESENT JOB	73	72	74
K 639	K1-02 00 YOU INSPECT AM TRANSMIT OR RECEIVE SYSTEMS	71	71	71
K 640	K1-03 00 YOU CLEAN AM TRANSMIT OR RECEIVE SYSTEMS	69	70	63
K 641	K1-04 00 YOU ALIGN OR ADJUST AM TRANSMIT OR RECEIVE SYSTEMS	69	70	67

SPECIAL PURPOSE
ELECTRON TUBES

HETERODYNING,
MODULATION, AND
DEMODULATION

AM SYSTEMS

PCT MBS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

		SPC SPC SPC	
		126	127 128
DY-TSK			
K 642 KI-05 DO YOU TROUBLESHOOT TO AM TRANSMIT OR RECEIVE SYSTEMS		72	72 70
K 643 KI-06 DO YOU TROUBLESHOOT TO AM TRANSMIT OR RECEIVE		71	71 69
COMPONENTS			
K 644 KI-07 DO YOU REMOVE OR REPLACE AM TRANSMIT OR RECEIVE		71	72 70
SYSTEMS			
K 645 KI-08 DO YOU REMOVE OR REPLACE AM TRANSMIT OR RECEIVE		70	71 67
COMPONENTS			
K 646 KI-09 DO YOU PERFORM TASKS ON RF OSCILLATORS		69	71 62
K 647 KI-10 DO YOU PERFORM TASKS ON RF AMPLIFIERS		68	70 62
K 648 KI-11 DO YOU PERFORM TASKS ON AUDIO AMPLIFIERS		68	70 62
K 649 KI-12 DO YOU PERFORM TASKS ON POWER AMPLIFIERS		66	68 60
K 650 KI-13 DO YOU PERFORM TASKS ON LOCAL OSCILLATORS		68	70 62
K 651 KI-14 DO YOU PERFORM TASKS ON IF AMPLIFIERS		69	71 63
K 652 KI-15 DO YOU PERFORM TASKS ON DETECTORS		68	70 61
K 653 KI-16 DO YOU PERFORM TASKS ON DON'T REMEMBER WHICH AM STAGE		19	14 12
K 654 KI-17 DO YOU USE OR REFER TO AMPLITUDE STABILIZATION IN		42	43 37
TRANSMITTERS			
K 655 KI-18 DO YOU USE OR REFER TO FREQUENCY STABILIZATION IN		51	52 46
TRANSMITTERS			
K 656 KI-19 DO YOU USE OR REFER TO SENSITIVITY OF RECEIVERS		69	71 64
K 657 KI-20 DO YOU USE OR REFER TO SELECTIVITY OF RECEIVERS		66	67 62
K 658 KI-21 DO YOU USE OR REFER TO 2ND HARMONIC DISTORTION		44	46 37
K 659 KI-22 DO YOU USE OR REFER TO BANDPASS DISTORTION		53	57 44
K 660 KI-23 DO YOU USE OR REFER TO SQUARE LAW DISTORTION		17	18 14
K 661 KI-24 DO YOU USE OR REFER TO CO-CHANNEL INTERFERENCE		31	35 21
K 662 KI-25 DO YOU USE OR REFER TO IMAGE FREQUENCIES IN RECEIVERS		40	43 32
K 663 KI-26 DO YOU USE OR REFER TO SIGNAL TO IMAGE RATIOS OR		36	38 31
IMAGE REJECTION RATIOS			
K 664 KI-27 DO YOU TRACE SIGNALS OR CURRENT PATMS THROUGH AM		57	60 50
TRANSMITTER SCHEMATIC DIAGRAMS			
K 665 KI-28 DO YOU TRACE SIGNALS OR CURRENT PATMS THROUGH AM		71	73 65
RECEIVER SCHEMATIC DIAGRAMS			
K 666 KI-29 DO YOU WORK WITH FM TRANSMIT OR RECEIVE SYSTEMS IN		74	73 77
YOUR PRESENT JOB			
K 667 KI-30 DO YOU INSPECT FM TRANSMIT OR RECEIVE SYSTEMS		75	74 77
K 668 KI-31 DO YOU CLEAN FM TRANSMIT OR RECEIVE SYSTEMS		71	72 69
K 669 KI-32 DO YOU ALIGN FM TRANSMIT OR RECEIVE SYSTEMS		72	72 74
K 670 KI-33 DO YOU TROUBLESHOOT TO FM TRANSMIT OR RECEIVE		75	74 77
SYSTEMS			
K 671 KI-34 DO YOU TROUBLESHOOT TO FM TRANSMIT OR RECEIVE		71	70 74
COMPONENTS			
K 672 KI-35 DO YOU REMOVE OR REPLACE FM TRANSMIT OR RECEIVE		74	73 74
SYSTEMS			
K 673 KI-36 DO YOU REMOVE OR REPLACE FM TRANSMIT OR RECEIVE		72	71 74
COMPONENTS			
K 674 KI-37 DO YOU PERFORM TASKS ON AUDIO AMPLIFIERS		65	66 63
K 675 KI-38 DO YOU PERFORM TASKS ON FREQUENCY MULTIPLIERS		67	68 64

FM SYSTEMS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK

SPC SPC SPC
126 127 128K 676 K2-11 DO YOU PERFORM TASKS ON DRIVERS (INTERMEDIATE
AMPLIFIERS)

K 677 K2-12 DO YOU PERFORM TASKS ON POWER AMPLIFIERS

K 678 K2-13 DO YOU PERFORM TASKS ON RF AMPLIFIERS

K 679 K2-14 DO YOU PERFORM TASKS ON FREQUENCY CONVERTERS

K 680 K2-15 DO YOU PERFORM TASKS ON IF AMPLIFIERS

K 681 K2-16 DO YOU PERFORM TASKS ON LIMITERS

K 682 K2-17 DO YOU PERFORM TASKS ON FREQUENCY DISCRIMINATORS

K 683 K2-18 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH

SCHEMATIC DIAGRAMS OF FM TRANSMITTERS

K 684 K2-19 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH

SCHEMATIC DIAGRAMS OF FM RECEIVERS

K 685 K3-01 DO YOU CONVERT DECIMAL (BASE 10) NUMBERS TO OCTAL

(BASE 8) NUMBERS

K 686 K3-02 DO YOU CONVERT DECIMAL NUMBERS TO BINARY (BASE 2)

NUMBERS

K 687 K3-03 DO YOU CONVERT OCTAL NUMBERS TO DECIMAL NUMBERS

K 688 K3-04 DO YOU CONVERT OCTAL NUMBERS TO BINARY NUMBERS

K 689 K3-05 DO YOU CONVERT BINARY NUMBERS TO DECIMAL NUMBERS

K 690 K3-06 DO YOU CONVERT BINARY NUMBERS TO OCTAL NUMBERS

K 691 K3-07 DO YOU ADD BINARY NUMBERS TO GET A SUM

K 692 K3-08 DO YOU SUBTRACT BINARY NUMBERS USING THE END-AROUND-

CARRY METHOD

K 693 K3-09 DO YOU SUBTRACT BINARY NUMBERS USING THE DIRECT

SUBTRACTION METHOD

K 694 K3-10 DO YOU ADD OCTAL NUMBERS TO GET A SUM

L 695 L1-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS

RELATING TO LOGIC FUNCTIONS

L 696 L1-02 DO YOU CONSTRUCT TRUTH TABLES FOR AND LOGIC SYMBOLS

OR GATES

L 697 L1-03 DO YOU CONSTRUCT TRUTH TABLES FOR OR LOGIC SYMBOLS

OR GATES

L 698 L1-04 DO YOU CONSTRUCT TRUTH TABLES FOR AND OR LOGIC

SYMBOLS WITH STATE INDICATORS

L 699 L1-05 DO YOU CONSTRUCT TRUTH TABLES FOR EXCLUSIVE OR LOGIC

SYMBOLS OR GATES

L 700 L1-06 DO YOU USE OR REFER TO TRUTH TABLES FOR AND LOGIC

SYMBOLS OR GATES

L 701 L1-07 DO YOU USE OR REFER TO TRUTH TABLES FOR OR LOGIC

SYMBOLS OR GATES

L 702 L1-08 DO YOU USE OR REFER TO TRUTH TABLES FOR AND OR

LOGIC SYMBOLS WITH STATE INDICATORS

L 703 L1-09 DO YOU USE OR REFER TO TRUTH TABLES FOR EXCLUSIVE OR

LOGIC SYMBOLS

L 704 L1-10 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR AND GATES

L 705 L1-11 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR OR GATES

L 706 L1-12 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR NAND OR NOR

GATES

NUMBERING
SYSTEMS

LOGIC FUNCTIONS

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

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TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

0Y-TSK

SPC SPC SPC
126 127 128

L 707 L1-13 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR EXCLUSIVE OR GATES 46 47 38
L 708 L2-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS RELATING TO BOOLEAN EQUATIONS, LOGIC DIAGRAMS, OR LOGIC CIRCUITS 38 37 30
L 709 L2-02 DO YOU DRAW LOGIC SYMBOLS FOR DIRECT COUPLED TRANSISTOR LOGIC (DCTL) CIRCUITS 10 11 6
L 710 L2-03 DO YOU CONSTRUCT TRUTH TABLES FOR CURRENT MODE LOGIC (CML) CIRCUITS 7 9 1
L 711 L2-04 DO YOU DRAW LOGIC DIAGRAMS FROM GIVEN BOOLEAN EQUATIONS 9 11 4
L 712 L2-05 DO YOU MEASURE INPUTS OR OUTPUTS OF LOGIC GATES 31 33 24
L 713 L2-06 DO YOU DEVELOP OR ANALYZE BOOLEAN EQUATIONS IN THE PROCESS OF TROUBLESHOOTING DIGITAL CIRCUITS 15 16 6
L 714 L2-07 DO YOU ANALYZE LOGIC CIRCUITS BY USING BOOLEAN ALGEBRA 15 18 6
L 715 L2-08 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR DIRECT COUPLED TRANSISTOR LOGIC (DCTL) CIRCUIT GATES 28 27 19
L 716 L2-09 DO YOU USE OR REFER TO TRUTH TABLES FOR CURRENT MODE LOGIC (CML) CIRCUITS 12 14 6
L 717 L2-10 DO YOU USE OR REFER TO LOGIC DIAGRAMS CONSISTING OF MORE THAN ONE GATE 32 34 24
L 718 L2-11 DO YOU COMPUTE SUM AND CARRY EXPRESSIONS FOR SERIAL HALF OR FULL ADDER LOGIC DIAGRAMS 13 15 7
L 719 L2-12 DO YOU TRACE DATA FLOW THROUGH PARALLEL FULL ADDER LOGIC DIAGRAMS 18 19 14
L 720 L2-13 DO YOU WORK WITH ASTABLE (FREE RUNNING) MULTIVIBRATORS 37 40 30
L 721 L2-14 DO YOU WORK WITH BISTABLE (FLIP-FLOP) MULTIVIBRATORS 38 41 29
L 722 L2-15 DO YOU WORK WITH MONOSTABLE (ONE-SHOT) MULTIVIBRATORS 38 40 29
L 723 L2-16 DO YOU USE OR REFER TO FLIP-FLOP MULTIVIBRATOR SYMBOLS 36 39 29
L 724 L2-17 DO YOU USE OR REFER TO SINGLE-SHOT MULTIVIBRATOR SYMBOLS 35 37 27
L 725 L2-18 DO YOU USE OR REFER TO FLIP-FLOP CIRCUIT DIAGRAMS 36 39 29
L 726 L2-19 DO YOU USE OR REFER TO FLIP-FLOP TRUTH TABLES 21 24 13
L 727 L2-20 DO YOU USE OR REFER TO COMPLEMENTED FLIP-FLOP LOGIC SYMBOLS 26 28 21
L 728 L2-21 DO YOU USE OR REFER TO COMPLEMENTING FLIP-FLOP LOGIC SYMBOLS 26 28 21
L 729 L2-22 DO YOU MEASURE OUTPUT WAVESHAPES OF LOGIC CIRCUITS 39 37 26
L 730 L2-23 DO YOU TRACE DATA FLOW THROUGH COMPLEMENTED FLIP-FLOP SCHEMATIC DIAGRAMS 27 29 21
L 731 L2-24 DO YOU TRACE DATA FLOW THROUGH COMPLEMENTING FLIP-FLOP SCHEMATIC DIAGRAMS 27 28 21
L 732 L2-25 DO YOU CONSTRUCT TRUTH TABLES FOR J-K FLIP-FLOP LOGIC SYMBOLS 8 10 4

BOOLEAN
EQUATIONS

PCT MBRs RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK

SPC	SPC	SPC	SPC	COUNTERS
126	127	128	129	
L 733	L3-01	DO YOU WORK WITH DIGITAL COUNTERS IN YOUR PRESENT JOB	42	45
L 734	L3-02	DO YOU USE OR REFER TO UP-COUNTERS	39	42
L 735	L3-03	DO YOU USE OR REFER TO DOWN-COUNTERS	36	40
L 736	L3-04	DO YOU USE OR REFER TO SERIAL COUNTERS	34	37
L 737	L3-05	DO YOU USE OR REFER TO PARALLEL COUNTERS	29	31
L 738	L3-06	DO YOU USE OR REFER TO RING COUNTERS	19	20
L 739	L3-07	DO YOU USE OR REFER TO DECADE COUNTERS	26	37
L 740	L3-08	DO YOU USE OR REFER TO COUNT DETECT CIRCUITS	24	27
L 741	L3-09	DO YOU USE OR REFER TO DOWN CLOCKS	34	38
L 742	L3-10	DO YOU USE OR REFER TO UP CLOCKS	35	38
L 743	L3-11	DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF UP-COUNTERS HAVING COMPLEMENTED FLIP-FLOPS	28	31
L 744	L3-12	DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF SERIAL UP- OR DOWN-COUNTERS HAVING COMPLEMENTING FLIP-FLOPS	28	30
L 745	L3-13	DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF DECADE COUNTERS	23	25
L 746	L3-14	DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF RING COUNTERS	17	19
L 747	L3-15	DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF SERIAL UP-COUNTERS FEEDING A PARALLEL STORAGE REGISTER	22	25
L 748	L3-16	DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF SHIFT REGISTERS	27	30
L 749	L3-17	DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF OTHER TYPE OF COUNTERS	23	27
L 750	L3-18	DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT PULSES FOR UP-COUNTERS HAVING COMPLEMENTED FLIP-FLOPS	19	20
L 751	L3-19	DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT PULSES FOR SERIAL UP- OR DOWN-COUNTERS HAVING COMPLEMENTING FLIP-FLOPS	19	20
L 752	L3-20	DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT PULSES FOR SERIAL UP-COUNTERS FEEDING A PARALLEL STORAGE REGISTER	17	18
L 753	L3-21	DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT PULSES FOR OTHER TYPES OF COUNTERS	15	17
L 754	L3-22	DO YOU CONSTRUCT TRUTH TABLES FROM LOGIC DIAGRAMS OF DECADE COUNTERS	7	8
L 755	L3-23	DO YOU DETERMINE THE STATE OF EACH FLIP-FLOP IN RING COUNTERS FOR SPECIFIC INPUT PULSES	14	15
L 756	L3-24	DO YOU DETERMINE THE APPROPRIATE AND GATE NECESSARY IN COUNT DETECT CIRCUITS TO INDICATE A REQUIRED COUNT	16	18
M 757	M1-01	DO YOU WORK WITH SAWTOOTH WAVE GENERATORS	76	78
M 758	M1-02	DO YOU WORK WITH TRAPEZOIDAL WAVE GENERATORS	72	74
M 759	M1-03	DO YOU WORK WITH PULSED OSCILLATORS WITH REGENERATIVE FEEDBACK	60	60
M 760	M1-04	DO YOU WORK WITH PULSED OSCILLATORS WITHOUT REGENERATIVE FEEDBACK	58	60

TIMING CIRCUITS

PCT MARS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DT-TSK

	SPC	SPC	SPC		SPC	SPC	SPC	
	126	127	128		126	127	128	
M 761 M1-06 DO YOU WORK WITH BLOCKING OSCILLATORS								
M 762 M1-06 DO YOU USE OR REFER TO RISE TIME	71	71	70					
M 763 M1-07 DO YOU USE OR REFER TO FALL OR FLBACK TIME	69	70	64					
M 764 M1-08 DO YOU USE OR REFER TO SLEEP TIME	61	62	61					
M 765 M1-09 DO YOU USE OR REFER TO ELECTRICAL LENGTH OF SANTOOTH WAVEFORMS	74	75	69					
M 766 M1-10 DO YOU USE OR REFER TO PHYSICAL LENGTH OF SANTOOTH WAVEFORMS	71	72	68					
M 767 M1-11 DO YOU USE OR REFER TO LINEAR SLOPE OF SANTOOTH WAVEFORMS	69	70	68					
M 768 M1-12 DO YOU USE OR REFER TO GATE LENGTH OF SANTOOTH WAVEFORMS	62	62	62					
M 769 M2-01 DO YOU USE SIGNAL GENERATORS IN YOUR PRESENT JOB	69	70	67					
M 770 M2-02 DO YOU PERFORM OPERATIONAL CHECKS WHILE USING SIGNAL GENERATORS	82	85	75					
M 771 M2-03 DO YOU PERFORM PERIODIC MAINTENANCE SUCH AS ADJUSTING, ALIGNING, OR CALIBRATING WHILE USING SIGNAL GENERATORS	80	82	74					
M 772 M2-04 DO YOU TROUBLESHOOT TO AN ASSEMBLY OR SUBASSEMBLY WHILE USING SIGNAL GENERATORS	69	72	57					
M 773 M2-05 DO YOU TROUBLESHOOT TO THE SMALLEST REPLACEABLE COMPONENT WHILE USING SIGNAL GENERATORS	66	67	63					
M 774 M2-06 DO YOU USE AUDIO SINE-WAVE GENERATORS	59	60	57					
M 775 M2-07 DO YOU USE AUDIO NON-SINUSOIDAL WAVE GENERATORS SUCH AS SQUARE WAVE, TRIANGLE, PULSE, OR SPIKE	69	70	63					
M 776 M2-08 DO YOU USE RF GENERATORS LESS THAN 1,000 MH	54	54	54					
M 777 M2-09 DO YOU USE RF GENERATORS GREATER THAN 1,000 MH	69	72	61					
M 778 M2-10 DO YOU USE OTHER SPECIAL PURPOSE OR MULTI-FUNCTION GENERATORS	68	72	57					
M 779 M3-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS DEALING WITH ALTERNATING CURRENT OR DIRECT CURRENT MOTORS OR GENERATORS	64	67	56					
M 780 M3-02 DO YOU INSPECT MOTORS	66	66	67					
M 781 M3-03 DO YOU CLEAN OR LUBRICATE MOTORS	66	66	67					
M 782 M3-04 DO YOU OPERATE MOTORS	67	68	68					
M 783 M3-05 DO YOU REMOVE OR REPLACE COMPLETE MOTORS	58	58	58					
M 784 M3-06 DO YOU REMOVE OR REPLACE MOTOR PARTS	64	63	65					
M 785 M3-07 DO YOU TROUBLESHOOT AS FAR AS CHECKING WINE CONNECTIONS OF MOTORS	65	64	67					
M 786 M3-08 DO YOU TROUBLESHOOT DOWN TO COMPONENT PARTS OF MOTORS	26	27	21					
M 787 M3-09 DO YOU PERFORM ANY TASKS ON FIELD COILS	63	62	65					
M 788 M3-10 DO YOU PERFORM ANY TASKS ON ARMATURES	19	20	13					
M 789 M3-11 DO YOU PERFORM ANY TASKS ON ROTORS	8	8	6					
M 790 M3-12 DO YOU PERFORM ANY TASKS ON BRUSHES	11	12	7					
M 791 M3-13 DO YOU PERFORM ANY TASKS ON SLIP RINGS	13	19	8					
M 792 M3-14 DO YOU PERFORM ANY TASKS ON COMMUTATORS	21	23	19					
M 793 M3-15 DO YOU PERFORM ANY TASKS ON POLE PIECES	15	17	8					
	12	13	8					
	9	10	8					

MOTORS AND
GENERATORS

USE OF SIGNAL
GENERATORS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK

SPC SPC SPC
126 127 128

N 794 M3-16 DO YOU DETERMINE OR MEASURE THE MAGNITUDE OF THE FORCE OR TORQUE CREATED BY A MOTOR

N 795 M3-17 DO YOU DETERMINE OR MEASURE THE DIRECTION OF THE MECHANICAL FORCE OR TORQUE CREATED BY A MOTOR

N 796 M3-18 DO YOU DETERMINE OR MEASURE THE MAGNITUDE OR DIRECTION OF THE INDUCED VOLTAGE IN MOTORS

N 797 M3-19 DO YOU WORK WITH SYNCHRONOUS MOTORS

N 798 M3-20 DO YOU WORK WITH INDUCTION MOTORS

N 799 M3-21 DO YOU WORK WITH SPLIT-PHASE MOTORS

N 800 M3-22 DO YOU WORK WITH SOME COMBINATION OF THE ABOVE MOTORS

N 801 M3-23 DO YOU INSPECT GENERATORS

N 802 M3-24 DO YOU CLEAN OR LUBRICATE GENERATORS

N 803 M3-25 DO YOU OPERATE GENERATORS

N 804 M3-26 DO YOU REMOVE OR REPLACE COMPLETE GENERATORS

N 805 M3-27 DO YOU REMOVE OR REPLACE GENERATOR PARTS

N 806 M3-28 DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS OF GENERATORS

N 807 M3-29 DO YOU TROUBLESHOOT DOWN TO COMPONENT PARTS OF GENERATORS

N 808 N1-01 DO YOU WORK WITH METERS IN YOUR PRESENT JOB

N 809 N1-02 DO YOU CONCEPTUALIZE OR CONSIDER THE FUNCTIONS OF PERMANENT MAGNETS

N 810 N1-03 DO YOU CONCEPTUALIZE OR CONSIDER THE FUNCTIONS OF MOVING COILS

N 811 N1-04 DO YOU CONCEPTUALIZE OR CONSIDER THE FUNCTIONS OF SPIRAL SPRINGS

N 812 N1-05 DO YOU READ METER SCALES

N 813 N1-06 DO YOU EXTEND THE RANGE OF AMMETERS

N 814 N1-07 DO YOU ZERO OHMMETERS

N 815 N1-08 DO YOU ZERO AMMETERS

N 816 N1-09 DO YOU EXTEND THE RANGE OF VOLTMETERS

N 817 N1-10 DO YOU USE OR REFER TO VOLTMETER SENSITIVITY (EXPRESSED IN UNITS OF OHMS PER VOLT)

N 818 N2-01 DO YOU WORK WITH SATURABLE REACTORS OR MAGNETIC AMPLIFIERS IN YOUR PRESENT JOB

N 819 N2-02 DO YOU INSPECT MAGNETIC AMPLIFIERS OR SATURABLE REACTORS

N 820 N2-03 DO YOU CLEAN MAGNETIC AMPLIFIERS OR SATURABLE REACTORS

N 821 N2-04 DO YOU ADJUST MAGNETIC AMPLIFIERS OR SATURABLE REACTORS

N 822 N2-05 DO YOU TROUBLESHOOT MAGNETIC AMPLIFIERS OR SATURABLE REACTORS

N 823 N2-06 DO YOU REMOVE OR REPLACE MAGNETIC AMPLIFIERS OR SATURABLE REACTORS

N 824 N2-07 DO YOU REMOVE OR REPLACE MAGNETIC AMPLIFIER OR SATURABLE REACTOR COMPONENTS

METER MOVEMENTS

SATURABLE REACTORS
AND MAGNETIC
AMPLIFIERS

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK		SPC	SPC	SPC
		126	127	128
N 825	N2-08 DO YOU USE OR REFER TO HYSTERESIS CURVES OR LOOPS	7	8	2
N 826	N2-09 DO YOU INTERPRET SCHEMATIC DRAWINGS TO DEVELOP OUTPUT WAVEFORMS ACROSS REACTOR WINDINGS OR LOAD RESISTORS OF SINGLE WINDING SATURABLE REACTORS	12	13	7
N 827	N2-10 DO YOU MEASURE OUTPUT WAVEFORMS ACROSS REACTOR WINDINGS OR LOAD RESISTORS OF SINGLE WINDING SATURABLE REACTORS	16	18	11
N 828	N2-11 DO YOU INTERPRET SCHEMATIC DRAWINGS TO DEVELOP OUTPUT WAVEFORMS FOR MAGNETIC AMPLIFIERS	12	14	7
N 829	N2-12 DO YOU USE OR REFER TO COERCIVE FORCE IN SATURABLE REACTORS	6	7	4
N 830	N2-13 DO YOU USE OR REFER TO RESIDUAL MAGNETISM IN SATURABLE REACTORS	7	8	4
N 831	N2-14 DO YOU USE OR REFER TO FLUX DENSITY IN SATURABLE REACTORS	8	9	4
N 832	N2-15 DO YOU USE OR REFER TO POINT OF SATURATION IN SATURABLE REACTORS	10	11	5
N 833	N2-16 DO YOU USE OR REFER TO SATURABLE REACTOR SCHEMATIC SYMBOLS	16	18	7
N 834	N3-01 DO YOU WORK WITH WAVESHAPING CIRCUITS IN YOUR PRESENT JOB	77	78	71
N 835	N3-02 DO YOU USE OR REFER TO TRANSIENT INTERVALS	38	38	36
N 836	N3-03 DO YOU USE OR REFER TO PULSE WIDTH (PW)	78	78	75
N 837	N3-04 DO YOU USE OR REFER TO PULSE RECURRENCE TIME (PRT)	72	73	70
N 838	N3-05 DO YOU USE OR REFER TO PULSE RECURRENCE FREQUENCY (PRF)	76	78	73
N 839	N3-06 DO YOU USE OR REFER TO DIFFERENTIATING CIRCUITS	66	66	65
N 840	N3-07 DO YOU USE OR REFER TO INTEGRATING CIRCUITS	66	67	63
N 841	N3-08 DO YOU USE OR REFER TO THE CLASSIFICATION OF TIME CONSTANTS (TC) AS LONG, MEDIUM, OR SHORT	55	56	52
N 842	N3-09 DO YOU DETERMINE WHETHER AN LR OR RC CIRCUIT IS DIFFERENTIATING OR INTEGRATING BASED ON THE TIME CONSTANT AND OUTPUT CONFIGURATION	28	29	27
N 843	N3-10 DO YOU WORK WITH SQUARE WAVE GENERATORS	67	68	64
N 844	N3-11 DO YOU WORK WITH RECTANGULAR WAVE GENERATORS	57	58	55
O 845	O1-01 DO YOU WORK ON SINGLE SIDEBAND SYSTEMS IN YOUR PRESENT JOB	10	12	4
O 846	O1-02 DO YOU INSPECT SSB TRANSMIT OR RECEIVE SYSTEMS	8	10	4
O 847	O1-03 DO YOU CLEAN SSB TRANSMIT OR RECEIVE SYSTEMS	8	9	4
O 848	O1-04 DO YOU ALIGN SSB TRANSMIT OR RECEIVE SYSTEMS	8	9	2
O 849	O1-05 DO YOU TROUBLESHOOT TO SSB TRANSMIT OR RECEIVE SYSTEMS	8	9	4
O 850	O1-06 DO YOU TROUBLESHOOT TO SSB TRANSMIT OR RECEIVE COMPONENTS	7	9	2
O 851	O1-07 DO YOU REMOVE OR REPLACE SSB TRANSMIT OR RECEIVE SYSTEMS	8	9	4
O 852	O1-08 DO YOU REMOVE OR REPLACE SSB TRANSMIT OR RECEIVE COMPONENTS	7	9	2

WAVESHAPING
CIRCUITS

SINGLE SIDEBAND
SYSTEMS

PCT MBS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMINGSPC SPC SPC
126 127 128

DY-TSK

0 853 01-09 DO YOU PERFORM TASKS ON SSB AUDIO AMPLIFIERS
 0 854 01-10 DO YOU PERFORM TASKS ON SSB BALANCED MODULATORS
 0 855 01-11 DO YOU PERFORM TASKS ON SSB CARRIER OSCILLATORS
 0 856 01-12 DO YOU PERFORM TASKS ON SSB LC FILTERS
 0 857 01-13 DO YOU PERFORM TASKS ON SSB CRYSTAL FILTERS
 0 858 01-14 DO YOU PERFORM TASKS ON SSB MECHANICAL FILTERS
 0 859 01-15 DO YOU PERFORM TASKS ON SSB OSCILLATORS
 0 860 01-16 DO YOU PERFORM TASKS ON SSB MIXERS
 0 861 01-17 DO YOU PERFORM TASKS ON SSB DRIVERS
 0 862 01-18 DO YOU PERFORM TASKS ON SSB POWER AMPLIFIERS
 0 863 01-19 DO YOU PERFORM TASKS ON SSB RF AMPLIFIERS
 0 864 01-20 DO YOU PERFORM TASKS ON SSB FREQUENCY CONVERTERS
 0 865 01-21 DO YOU PERFORM TASKS ON SSB IF AMPLIFIERS
 0 866 01-22 DO YOU PERFORM TASKS ON SSB DEMODULATORS
 0 867 01-23 DO YOU PERFORM TASKS ON SSB DON'T REMEMBER WHICH SSB
 SYSTEM STAGES
 0 868 01-24 DO YOU USE OR REFER TO SELECTIVE FADING
 0 869 01-25 DO YOU USE OR REFER TO PEAK POWER
 0 870 01-26 DO YOU USE OR REFER TO FREQUENCY STABILITY
 0 871 01-27 DO YOU USE OR REFER TO RESPONSE CURVES FOR
 BANDWIDTH FILTERS
 0 872 01-28 DO YOU CALCULATE PEAK POWER OR EFFECTIVE POWER OF SSB
 TRANSMITTERS
 0 873 01-29 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SSB
 TRANSMITTER SCHEMATIC DIAGRAMS
 0 874 01-30 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SSB
 RECEIVER SCHEMATIC DIAGRAMS
 0 875 02-01 DO YOU WORK ON PULSE MODULATION SYSTEMS IN YOUR
 PRESENT JOB
 0 876 02-02 DO YOU INSPECT PULSE MODULATION SYSTEMS
 0 877 02-03 DO YOU CLEAN PULSE MODULATION SYSTEMS
 0 878 02-04 DO YOU ALIGN PULSE MODULATION SYSTEMS
 0 879 02-05 DO YOU TROUBLESHOOT TO PULSE MODULATION SYSTEMS
 0 880 02-06 DO YOU TROUBLESHOOT TO PULSE MODULATION SYSTEM
 COMPONENTS
 0 881 02-07 DO YOU REMOVE OR REPLACE PULSE MODULATION SYSTEMS
 0 882 02-08 DO YOU REMOVE OR REPLACE PULSE MODULATION SYSTEM
 COMPONENTS
 0 883 02-09 DO YOU WORK ON PULSE-AMPLITUDE MODULATION (PAM)
 SYSTEMS
 0 884 02-10 DO YOU WORK ON PULSE-DURATION MODULATION (PDM)
 SYSTEMS
 0 885 02-11 DO YOU WORK ON PULSE-POSITION MODULATION (PPM)
 SYSTEMS
 0 886 02-12 DO YOU WORK ON PULSE-CODE MODULATION (PCM) SYSTEMS
 0 887 02-13 DO YOU WORK ON LINE PULSING MODULATION SYSTEMS
 0 888 02-14 DO YOU WORK ON DON'T REMEMBER WHICH TYPE OF
 MODULATION SYSTEM

PULSE MODULATION
SYSTEMS

PCT MBS RESPONDING 'YES' BY SELECTED GRPS

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TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

SPC SPC SPC
126 127 128

0Y-TSK

0 889 02-15 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM
POWER SUPPLIES 63 65 57

0 890 02-16 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM
CHARGING CHOKES AND CHARGING DIODES 53 55 44

0 891 02-17 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM
PULSE FORMING NETWORKS 64 66 56

0 892 02-18 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM
TIMERS 57 60 46

0 893 02-19 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM
SWITCHES SUCH AS GAS THYRATRONS 48 48 48

0 894 02-20 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM
PULSE TRANSFORMERS 62 63 57

0 895 02-21 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM
TRANSMITTER TUBES 63 65 58

0 896 02-22 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM RF
AMPLIFIERS 64 65 58

0 897 02-23 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM
FREQUENCY CONVERTERS 59 60 56

0 898 02-24 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM
IF AMPLIFIERS 65 66 60

0 899 02-25 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM
DETECTORS 63 65 55

0 900 02-26 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM
VIDEO AMPLIFIERS 62 64 57

0 901 02-27 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM
POWER VIDEO AMPLIFIERS 52 54 45

0 902 02-28 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM
DON'T REMEMBER WHICH PULSE MODULATION SYSTEM STAGES
(PRF) 13 15 7

0 903 02-29 DO YOU USE OR REFER TO PULSE RECURRENCE FREQUENCY
(PRF) 68 70 63

0 904 02-30 DO YOU USE OR REFER TO PULSE RECURRENCE TIME (PRT) 60 63 52

0 905 02-31 DO YOU USE OR REFER TO PULSE WIDTH (PW) 68 69 63

0 906 02-32 DO YOU USE OR REFER TO PULSE SHAPE 67 69 61

0 907 02-33 DO YOU USE OR REFER TO PEAK POWER 67 68 62

0 908 02-34 DO YOU USE OR REFER TO AVERAGE POWER 59 62 50

0 909 02-35 DO YOU CALCULATE PULSE RECURRENCE TIME (PRT) OR PULSE
RECURRENCE FREQUENCY (PRF) 49 51 43

0 910 02-36 DO YOU MEASURE PULSE RECURRENCE TIME (PRT) OR PULSE
RECURRENCE FREQUENCY (PRF) 63 65 58

0 911 02-37 DO YOU USE FORMULAS TO CALCULATE AVERAGE POWER OR
PEAK POWER OF PULSE MODULATION TRANSMIT SYSTEMS 40 42 35

0 912 02-38 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH PULSE
MODULATION TRANSMITTER SCHEMATIC DIAGRAMS 66 68 60

0 913 02-39 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH PULSE
MODULATION RECEIVER SCHEMATIC DIAGRAMS 47 49 62

0 914 03-01 DO YOU WORK WITH ANTENNAS IN YOUR PRESENT JOB 90 92 82

0 915 03-02 DO YOU INSPECT ANTENNAS 90 92 82

ANTENNAS

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

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TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK

SPC SPC SPC
126 127 128

86 88 79

61 62 57

53 53 55

88 91 80

59 61 54

90 92 82

59 61 54

13 13 12

12 14 6

10 12 7

13 15 8

12 14 7

12 13 7

30 31 26

22 22 20

25 25 24

22 22 24

53 54 52

25 26 21

12 13 8

6 7 4

23 26 12

10 11 10

9 10 5

8 9 5

32 32 35

28 28 27

11 11 10

6 7 4

0 914 03-03 DO YOU CLEAN ANTENNAS
0 917 03-04 DO YOU PHYSICALLY ALIGN ANTENNAS
0 918 03-05 DO YOU ELECTRICALLY ALIGN ANTENNAS
0 919 03-06 DO YOU TROUBLESHOOT TO ANTENNAS
0 920 03-07 DO YOU TROUBLESHOOT TO ANTENNA COMPONENTS
0 921 03-08 DO YOU REMOVE OR INSTALL ANTENNAS
0 922 03-09 DO YOU REMOVE OR REPLACE COMPONENTS OF ANTENNAS
0 923 03-10 DO YOU USE OR REFER TO TECHNICAL DATA CONTAINING REPRESENTATIONS OF E OR ELECTRIC FIELD LINES
0 924 03-11 DO YOU USE OR REFER TO TECHNICAL DATA CONTAINING REPRESENTATIONS OF H OR MAGNETIC FIELD LINES
0 925 03-12 DO YOU DETERMINE THE DIRECTION OF THE MAGNETIC LINES IN RELATION TO THE ELECTRIC LINES OF FORCE FOR ANTENNAS
0 926 03-13 DO YOU USE OR REFER TO THE GENERAL RULE THAT ANTENNAS WHICH ARE OF CORRECT LENGTH (HALF-WAVE) ACT AS INDUCTIVE LOADS TO THE GENERATOR
0 927 03-14 DO YOU USE OR REFER TO THE GENERAL RULE THAT ANTENNAS WHICH ARE LONGER THAN A HALF-WAVE ACT AS INDUCTIVE LOADS TO THE GENERATOR
0 928 03-15 DO YOU USE OR REFER TO THE GENERAL RULE THAT ANTENNAS WHICH ARE SHORTER THAN A HALF-WAVE ACT AS CAPACITIVE LOADS TO THE GENERATOR
0 929 03-16 DO YOU WORK WITH HERTZ ANTENNAS
0 930 03-17 DO YOU WORK WITH MARCONI ANTENNAS
0 931 03-18 DO YOU WORK WITH BROADSIDE ARRAYS
0 932 03-19 DO YOU WORK WITH END-FIRE ARRAYS
0 933 03-20 DO YOU WORK WITH CARDIOID ARRAYS
0 934 03-21 DO YOU WORK WITH COLLINEAR ARRAYS
0 935 03-22 DO YOU USE OR REFER TO THE TERM ELECTROMAGNETIC INDUCTION FIELDS WHEN WORKING WITH ANTENNAS
0 936 03-23 DO YOU MEASURE ELECTROMAGNETIC INDUCTION FIELDS OF ANTENNAS
0 937 03-24 DO YOU USE OR REFER TO THE TERM ELECTROMAGNETIC RADIATION FIELDS WHEN WORKING WITH ANTENNAS
0 938 03-25 DO YOU MEASURE ELECTROMAGNETIC RADIATION FIELDS OF ANTENNAS
0 939 03-26 DO YOU USE OR REFER TO THE TIME PHASE OF ELECTRIC (E) AND MAGNETIC (H) COMPONENTS IN ANTENNA RADIATION
0 940 03-27 DO YOU USE OR REFER TO THE TIME PHASE OF ELECTRIC (E) AND MAGNETIC (H) COMPONENTS IN ANTENNA INDUCTION FIELD
0 941 03-28 ARE ANY OF THE ANTENNAS YOU WORK ON LINEARLY POLARIZED
0 942 03-29 ARE ANY OF THE ANTENNAS YOU WORK ON CIRCULARLY POLARIZED
0 943 03-30 DO YOU MEASURE OR DETERMINE THE POLARITY OF ANTENNAS YOU WORK ON
0 944 03-31 DO YOU CONSTRUCT, OR MAKE THE CALCULATIONS NECESSARY TO CONSTRUCT, ANTENNAS OF CORRECT LENGTH FOR SPECIFIC WAVELENGTHS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK

SPC SPC SPC
126 127 128

O 945 03-22 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC ELEMENTS

O 946 03-23 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC ELEMENTS SERVING AS DIRECTORS

O 947 03-24 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC ELEMENTS SERVING AS REFLECTORS

O 948 03-25 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN DON'T REMEMBER WHAT KIND OF ELEMENTS

O 949 03-26 DO YOU WORK ON UNIDIRECTIONAL ANTENNAS

O 950 03-27 DO YOU WORK ON BIDIRECTIONAL ANTENNAS

O 951 03-28 DO YOU WORK ON DON'T REMEMBER THE DIRECTIONALITY

O 952 03-29 DO YOU WORK WITH ROTAR ANTENNA ARRAYS

P 953 PI-01 IN YOUR PRESENT JOB DO YOU WORK WITH TRANSMISSION LINES (TRANSMISSION LINES ARE DEFINED TO INCLUDE LEADS BETWEEN RECEIVERS AND ANTENNAS, TELEPHONE LEADS, AS WELL AS HIGH VOLTAGE POWER LINES, ETC. DO NOT CONSIDER WAVEGUIDES AS TRANSMISSION LINES)

TRANSMISSION
LINES

P 954 PI-02 DO YOU REFER TO OR USE COPPER LOSS OR IZR LOSS IN TRANSMISSION LINES

P 955 PI-03 DO YOU REFER TO OR USE SKIN EFFECTS OF HIGH FREQUENCY CURRENTS IN TRANSMISSION LINES

P 956 PI-04 DO YOU REFER TO OR USE RADIATION LOSS IN TRANSMISSION LINES

P 957 PI-05 DO YOU USE OR REFER TO DIELECTRIC LOSS IN TRANSMISSION LINES

P 958 PI-06 DO YOU USE OR REFER TO LEAKAGE LOSSES IN TRANSMISSION LINES

P 959 PI-07 DO YOU WORK WITH TWISTED PAIR TRANSMISSION LINES

P 960 PI-08 DO YOU WORK WITH TWIN LEAD TRANSMISSION LINES

P 961 PI-09 DO YOU WORK WITH OPEN TWO-WIRE TRANSMISSION LINES

P 962 PI-10 DO YOU WORK WITH FLEXIBLE COAXIAL CABLE TRANSMISSION LINES

P 963 PI-11 DO YOU WORK WITH RIGID COAXIAL CABLE TRANSMISSION LINES

P 964 PI-12 DO YOU TROUBLESHOOT TRANSMISSION LINES

P 965 PI-13 DO YOU ANALYZE VOLTAGE OR CURRENT WAVEFORMS IN TRANSMISSION LINES TO DETERMINE THE TYPE OF TERMINATION (OPEN, SHORTED, CAPACITIVE, INDUCTIVE)

P 966 PI-14 DO YOU SELECT APPROPRIATE TRANSMISSION LINES TERMINATIONS TO ACHIEVE DESIRED WAVEFORMS

P 967 PI-15 DO YOU USE OR REFER TO SCHEMATIC SYMBOLS FOR LINE TERMINATIONS IN TERMS OF CIRCUIT TERMINATIONS

P 968 PI-16 DO YOU MEASURE STANDING WAVE RATIOS (SWR) OF TRANSMISSION LINES

P 969 PI-17 DO YOU CALCULATE STANDING WAVE RATIOS (SWR) OF TRANSMISSION LINES

P 970 PI-18 DO YOU PERFORM THE CALCULATIONS NECESSARY TO DETERMINE THE IMPEDANCE AND LENGTH OF QUARTER - WAVELENGTH MATCHING TRANSFORMERS TO MATCH TRANSMISSION LINES TO LOADS

8 9 5
16 18 10
28 30 19
17 19 10
21 24 10
14 15 11
13 15 7
10 12 4
62 63 54
40 40 42
59 61 55
14 15 13
11 13 7
27 28 25
47 48 42
20 23 11
7 7 5

PCT HRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK		SPC	SPC	SPC	WAVEGUIDES AND CAVITY RESONATORS
		126	127	128	
P 971	PI-19 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED TO LOADS USING MATCHING TRANSFORMERS	20	22	13	
P 972	PI-20 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED TO LOADS USING DELTA MATCHING	11	13	7	
P 973	PI-21 DO YOU SELECT THE TYPE OF TRANSMISSION LINE NEEDED FOR PARTICULAR JOBS WITHOUT REFERRING TO TECHNICAL DATA	7	6	5	
P 974	PI-22 DO YOU USE OR REFER TO THE TERM CHARACTERISTIC IMPEDANCE (Z0) OF TRANSMISSION LINES	22	21	23	
P 975	PI-23 DO YOU CALCULATE THE CHARACTERISTIC IMPEDANCE (Z0) OF TRANSMISSION LINES	6	7	2	
P 976	PI-24 DO YOU USE OR REFER TO THE TERM CUTOFF FREQUENCY OF TRANSMISSION LINES	9	9	7	
P 977	PI-25 DO YOU USE OR REFER TO THE TERM VELOCITY FACTOR (K) OF TRANSMISSION LINES	4	5	4	
P 978	PI-26 DO YOU COMPUTE THE ELECTRICAL LENGTH OF TRANSMISSION LINES FOR PARTICULAR FREQUENCIES	8	8	8	
P 979	PI-27 DO YOU CONSTRUCT TRANSMISSION LINES OF PARTICULAR ELECTRICAL LENGTH FOR GIVEN FREQUENCIES	10	11	10	
P 980	PI-28 DO YOU USE OR REFER TO THE GENERAL RULE THAT AS THE FREQUENCY INCREASES AND THE PHYSICAL LENGTH OF TRANSMISSION LINES REMAIN CONSTANT, THE ELECTRICAL LENGTH INCREASES	13	13	11	
P 981	PI-29 DO YOU WORK WITH NONRESONANT (FLAT) TRANSMISSION LINES	15	16	12	
P 982	PI-30 DO YOU WORK WITH RESONANT TRANSMISSION LINES	26	29	18	
P 983	PI-31 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED TO LOADS USING STUB MATCHING	13	13	14	
P 984	P2-01 DO YOU WORK WITH WAVEGUIDES OR CAVITY RESONATORS IN YOUR PRESENT JOB	67	67	65	
P 985	P2-02 DO YOU INSPECT WAVEGUIDES OR CAVITY RESONATORS	67	67	67	
P 986	P2-03 DO YOU CLEAN WAVEGUIDES OR CAVITY RESONATORS	56	56	57	
P 987	P2-04 DO YOU BEND WAVEGUIDES OR CAVITY RESONATORS	26	27	25	
P 988	P2-05 DO YOU TWIST WAVEGUIDES OR CAVITY RESONATORS	20	20	21	
P 989	P2-06 DO YOU PRESSURIZE WAVEGUIDES OR CAVITY RESONATORS	41	40	42	
P 990	P2-07 DO YOU PURGE WAVEGUIDES OR CAVITY RESONATORS	22	23	20	
P 991	P2-08 DO YOU TROUBLESHOOT WAVEGUIDES OR CAVITY RESONATORS	58	57	56	
P 992	P2-09 DO YOU REMOVE OR INSTALL COMPLETE WAVEGUIDES	41	42	41	
P 993	P2-10 DO YOU REMOVE OR INSTALL WAVEGUIDE SECTIONS	60	60	60	
P 994	P2-11 DO YOU REMOVE OR INSTALL DUMMY LOADS	63	63	61	
P 995	P2-12 DO YOU REMOVE OR INSTALL E BENDS	32	33	29	
P 996	P2-13 DO YOU REMOVE OR INSTALL H BENDS	32	33	29	
P 997	P2-14 DO YOU REMOVE OR INSTALL OTHER BENDS	41	41	39	
P 998	P2-15 DO YOU REMOVE OR INSTALL CHOKE JOINTS	20	21	15	
P 999	P2-16 DO YOU REMOVE OR INSTALL ROTATING JOINTS	19	21	15	
P1000	P2-17 DO YOU REMOVE OR INSTALL DIRECTIONAL COUPLERS	54	53	57	
P1001	P2-18 DO YOU REMOVE OR INSTALL BIDIRECTIONAL COUPLERS	42	42	44	
P1002	P2-19 DO YOU USE OR REFER TO "A" WALL OF WAVEGUIDES	13	14	8	

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

0Y-TSK

	SPC 126	SPC 127	SPC 128
P1003 P2-20 DO YOU USE OR REFER TO "B" WALL OF WAVEGUIDES	12	13	8
P1004 P2-21 DO YOU USE OR REFER TO CUTOFF FREQUENCY OF WAVEGUIDES	12	12	11
P1005 P2-22 DO YOU USE OR REFER TO FREQUENCY-DETERMINING WALL OF WAVEGUIDES	11	12	8
P1006 P2-23 DO YOU USE OR REFER TO POWER-DETERMINING WALL OF WAVEGUIDES	10	10	8
P1007 P2-24 DO YOU USE OR REFER TO ELECTRIC FIELD BOUNDARY CONDITIONS	7	7	7
P1008 P2-25 DO YOU USE OR REFER TO MAGNETIC FIELD BOUNDARY CONDITIONS	6	7	6
P1009 P2-26 DO YOU USE OR REFER TO DUPLEXER FIELD BOUNDARY CONDITIONS	8	8	7
P1010 P2-27 DO YOU USE OR REFER TO THE GENERAL RULE THAT MOST WAVEGUIDES ARE MADE WITH A "B" WALL SIZE OF .7 WAVELENGTHS OF THE OPERATING FREQUENCY	8	10	2
P1011 P2-28 DO YOU USE OR REFER TO THE GENERAL RULE THAT MOST "A" WALLS RANGE FROM .2 TO .5 WAVELENGTHS IN SIZE, WITH .35 USED AS AN AVERAGE	6	7	4
P1012 P2-29 ARE YOU CONCERNED WITH THE MATERIAL (SUCH AS BRASS) WHICH WAVEGUIDES ARE MADE OF	11	12	7
P1013 P2-30 DO YOU COMPUTE THE LENGTH OF A WAVEGUIDE FOR SPECIFIC INSTALLATION	5	5	5
P1014 P2-31 DO YOU USE THE RIGHT HAND RULE TO DETERMINE THE DIRECTION OF PROPAGATION, DIRECTION OF "E" FIELD, OR DIRECTION OF "H" FIELD IN WAVEGUIDES	5	5	5
P1015 P2-32 DO YOU USE OR REFER TO THE TIME PHASE OF PEAK "E" OR "H" LINES IN WAVEGUIDES	5	6	4
P1016 P2-33 DO YOU MEASURE THE TIME PHASE OF "E" OR "H" LINES IN WAVEGUIDES	4	4	4
P1017 P2-34 DO YOU USE OR REFER TO THE SPACE QUADRATURE OF "E" OR "H" LINES IN WAVEGUIDES	4	4	4
P1018 P2-35 ARE HIGH POWER PROBES USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	29	29	31
P1019 P2-36 ARE LOW POWER PROBES USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	32	33	31
P1020 P2-37 ARE LOOPS USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	27	26	29
P1021 P2-38 ARE APERTURES (WINDOWS OR IRISES) USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	40	42	35
P1022 P2-39 ARE DON'T REMEMBER THE KIND OF ENERGY COUPLING USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	23	23	23
P1023 P2-40 DO YOU DETERMINE WHERE PROBES SHOULD BE MOUNTED IN WAVEGUIDES OR CAVITY RESONATORS WITHOUT REFERRING TO TECHNICAL DATA	6	5	6
P1024 P2-41 DO YOU DETERMINE THE POSITIONING OF LOOPS IN WAVEGUIDES OR CAVITY RESONATORS WITHOUT REFERRING TO TECHNICAL DATA	4	4	5

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK

SPC SPC SPC
126 127 128P1025 P2-42 DO YOU DETERMINE THE POSITIONING OR SIZE OF APERTURES
IN WAVEGUIDES OR CAVITY RESONATORS WITHOUT REFERRING TO
TECHNICAL DATAP1026 P2-43 ARE CHOKE JOINTS USED IN WAVEGUIDES OR CAVITY
RESONATORS YOU WORK WITHP1027 P2-44 ARE ROTATING JOINTS USED IN WAVEGUIDES OR CAVITY
RESONATORS YOU WORK WITHP1028 P2-45 ARE DON'T REMEMBER THE KIND OF JOINTS USED IN
WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH

P1029 P2-46 DO YOU TUNE CAVITY RESONATORS USING CAPACITIVE TUNING

P1030 P2-47 DO YOU TUNE CAVITY RESONATORS USING INDUCTIVE TUNING

P1031 P2-48 DO YOU TUNE CAVITY RESONATORS USING VOLUME TUNING

P1032 P2-49 DO YOU TUNE CAVITY RESONATORS USING DON'T REMEMBER
THE METHOD OF TUNINGP1033 P2-50 DO YOU MEASURE THE FREQUENCY OF SIGNALS IN CAVITY
RESONATORSMICROWAVE
AMPLIFIERS AND
OSCILLATORSSPC SPC SPC
126 127 128P1034 P3-01 IN YOUR PRESENT JOB DO YOU WORK WITH KLYSTRONS,
TRAVELING WAVE TUBES (TWT), PARAMETRIC AMPLIFIERS, OR
MAGNETRONS

P1035 P3-02 DO YOU USE OR REFER TO INTERELECTRODE CAPACITANCE

P1036 P3-03 DO YOU USE OR REFER TO ELECTRON TRANSIT TIME

P1037 P3-04 DO YOU USE OR REFER TO LEAD INDUCTANCE

P1038 P3-05 DO YOU USE OR REFER TO RF LOSSES IN EXTERNAL
CIRCUITRYP1039 P3-06 DO YOU USE OR REFER TO PRINCIPLE OF ELECTRON VELOCITY
MODULATION

P1040 P3-07 DO YOU USE OR REFER TO ELECTRON BUNCHING

P1041 P3-08 DO YOU WORK WITH TWO-CAVITY KLYSTRONS

P1042 P3-09 DO YOU WORK WITH THREE-CAVITY KLYSTRONS

P1043 P3-10 DO YOU WORK WITH REFLEX KLYSTRONS

P1044 P3-11 DO YOU WORK WITH TRAVELING-WAVE TUBES (TWT)

P1045 P3-12 DO YOU WORK WITH NONDEGENERATIVE PARAMETRIC
AMPLIFIERS

P1046 P3-13 DO YOU WORK WITH UP-CONVERTER PARAMETRIC AMPLIFIERS

P1047 P3-14 DO YOU WORK WITH MAGNETRONS

P1048 P3-15 DO YOU INSPECT KLYSTRONS OR TWT

P1049 P3-16 DO YOU CLEAN KLYSTRONS OR TWT

P1050 P3-17 DO YOU TUNE KLYSTRONS OR TWT ELECTRICALLY

P1051 P3-18 DO YOU TUNE KLYSTRONS OR TWT MECHANICALLY

P1052 P3-19 DO YOU PERFORM OPERATIONAL CHECKS OF KLYSTRONS OR
TWT

P1053 P3-20 DO YOU TROUBLESHOOT KLYSTRONS OR TWT

P1054 P3-21 DO YOU REMOVE OR REPLACE COMPLETE KLYSTRON OR TWT

P1055 P3-22 DO YOU REMOVE OR REPLACE KLYSTRON OR TWT COMPONENTS

P1056 P3-23 DO YOU INSPECT PARAMETRIC AMPLIFIERS

P1057 P3-24 DO YOU CLEAN PARAMETRIC AMPLIFIERS

P1058 P3-25 DO YOU ADJUST PARAMETRIC AMPLIFIERS

PCT MGRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

UY-TSK

	SPC	SPC	SPC
	126	127	128
P1089 P3-24 DO YOU TUNE PARAMETRIC AMPLIFIERS	8	8	5
P1090 P3-27 DO YOU PERFORM OPERATIONAL CHECKS OF PARAMETRIC AMPLIFIERS	7	8	6
P1061 P3-28 DO YOU TROUBLESHOOT PARAMETRIC AMPLIFIERS	7	8	6
P1062 P3-29 DO YOU REMOVE OR REPLACE COMPLETE PARAMETRIC AMPLIFIER	7	8	6
P1063 P3-30 DO YOU REMOVE OR REPLACE PARAMETRIC AMPLIFIER COMPONENTS	7	8	6
P1064 P3-31 DO YOU INSPECT MAGNETRONS	50	50	52
P1065 P3-32 DO YOU CLEAN MAGNETRONS	40	41	37
P1066 P3-33 DO YOU ADJUST MAGNETRONS	37	37	35
P1067 P3-34 DO YOU TUNE MAGNETRONS	38	40	33
P1068 P3-35 DO YOU PERFORM OPERATIONAL CHECKS OF MAGNETRONS	49	48	46
P1069 P3-36 DO YOU TROUBLESHOOT MAGNETRONS	43	45	39
P1070 P3-37 DO YOU REMOVE OR REPLACE COMPLETE MAGNETRON	51	50	54
P1071 P3-38 DO YOU REMOVE OR REPLACE MAGNETRON COMPONENTS	8	9	6
P1072 P3-39 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS COLLECTOR PLATES	10	11	7
P1073 P3-40 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CATCHER CAVITIES	8	9	5
P1074 P3-41 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CATCHER GRIDS	8	10	9
P1075 P3-42 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS FEEDBACK LOOPS	11	13	5
P1076 P3-43 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS DRIFT SPACES	6	7	2
P1077 P3-44 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS BUNCHER GRIDS	6	7	9
P1078 P3-45 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS BUNCHER CAVITIES	6	7	4
P1079 P3-46 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CONTROL GRIDS	11	12	10
P1080 P3-47 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CATHODES	13	14	12
P1081 P3-48 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON REPELLER (REFLECTOR) PLATES	33	34	30
P1082 P3-49 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON GRIDS	30	32	23
P1083 P3-50 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON GRID CAVITY GAPS	20	22	15
P1084 P3-51 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON RESONANT CAVITIES	32	32	30
P1085 P3-52 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON MAGNETIC COUPLING LOOPS	19	20	16
P1086 P3-53 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON FILAMENTS	28	29	24
P1087 P3-54 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON CATHODES	30	32	25

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK

	SPC	SPC	SPC
	126	127	128
P1088 P3-55 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON OUTPUT LEADS	28	30	24
P1089 P3-56 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES FILAMENTS	11	11	12
P1090 P3-57 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES CATHODES	12	11	13
P1091 P3-58 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES MODULATOR GRIDS	10	10	10
P1092 P3-59 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES ANODES	11	11	11
P1093 P3-60 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES HELIXES	6	6	6
P1094 P3-61 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES COLLECTORS	10	9	12
P1095 P3-62 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES MAGNETS	9	9	10
P1096 P3-63 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES ATTENUATORS	11	11	11
P1097 P3-64 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER FERRITE CIRCULATORS	5	5	4
P1098 P3-65 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER SIGNAL CAVITIES	6	5	6
P1099 P3-66 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER IDLER CAVITIES	4	4	4
P1100 P3-67 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER VARACTOR ISOLATORS	7	7	7
P1101 P3-68 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER FERRITE ISOLATORS	5	5	4
P1102 P3-69 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER REVERSE-BIAS BATTERIES	3	3	4
P1103 P3-70 DO YOU PERFORM TASKS ON ANODES	9	9	10
P1104 P3-71 DO YOU PERFORM TASKS ON ANODE COOLING PINS	7	7	7
P1105 P3-72 DO YOU PERFORM TASKS ON COUPLING LOOPS	9	9	8
P1106 P3-73 DO YOU PERFORM TASKS ON HEATER LEADS	9	10	8
P1107 P3-74 DO YOU PERFORM TASKS ON RESONANT CAVITIES	12	13	4
P1108 P3-75 DO YOU PERFORM TASKS ON CATHODES	10	10	12
P1109 P3-76 DO YOU PERFORM TASKS ON MAGNETS	10	11	8
Q1110 Q1-01 DO YOU USE OR REFER TO STORAGE REGISTERS	26	28	17
Q1111 Q1-02 DO YOU USE OR REFER TO SHIFT REGISTERS	29	33	18
Q1112 Q1-03 DO YOU USE OR REFER TO LOGIC SYMBOLS OF SHIFT REGISTERS	30	34	17
Q1113 Q1-04 DO YOU USE OR REFER TO LOGIC SYMBOLS OF STORAGE REGISTERS	26	30	14
Q1114 Q1-05 DO YOU TRACE THE DATA FLOW THROUGH LOGIC DIAGRAMS OF SHIFT REGISTERS	26	30	14
Q1115 Q1-06 DO YOU TRACE THE DATA FLOW THROUGH LOGIC DIAGRAMS OF OTHER TYPE OF REGISTERS	22	24	14

REGISTERS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK

SPC SPC SPC
126 127 128Q1114 Q1-07 DO YOU DETERMINE THE STATE OF EACH FLIP-FLOP OF A
SHIFT REGISTER AFTER A SPECIFIED NUMBER OF SHIFT PULSES
HAVE PASSED

25 28 15

Q1117 Q2-01 DO YOU WORK WITH DIGITAL COUNTERS, REGISTERS, OR

33 35 26

STORAGE DEVICES IN YOUR PRESENT JOB

Q1118 Q2-02 DO YOU USE OR REFER TO DELAY LINES

33 36 24

Q1119 Q2-03 DO YOU USE OR REFER TO MAGNETIC CORES

13 14 10

Q1120 Q2-04 DO YOU USE OR REFER TO MAGNETIC DRUMS

8 8 5

Q1121 Q2-05 DO YOU USE OR REFER TO MAGNETIC TAPES

9 10 8

Q1122 Q2-06 DO YOU USE OR REFER TO ACCESS TIME OR SPEED OR

12 13 8

MEMORY SYSTEMS

Q1123 Q2-07 DO YOU USE OR REFER TO WORD CAPACITY OF MEMORY

7 7 5

SYSTEMS

Q1124 Q2-08 DO YOU USE OR REFER TO VOLATILITY OF MEMORY SYSTEMS

6 7 4

Q1125 Q2-09 DO YOU USE OR REFER TO LOGIC SYMBOL OF DELAY LINES

20 22 14

Q1126 Q3-01 IN YOUR PRESENT JOB, DO YOU WORK WITH DIGITAL-TO-

19 22 11

ANALOG (D/A) CONVERTERS, ANALOG-TO-DIGITAL (A/D)

DIGITAL TO

CONVERTERS, OR BINARY-TO-DECIMAL READOUT CONVERTERS

ANALOG CONVERTERS

Q1127 Q3-02 DO YOU COMPUTE OUTPUT VOLTAGES FOR ELECTROMECHANICAL

7 8 4

DIGITAL-TO-ANALOG (D/A) CONVERTERS FOR GIVEN INPUT

VOLTAGES

Q1128 Q3-03 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE

5 6 4

COUNT IN ELECTROMECHANICAL DIGITAL-TO-ANALOG (D/A)

CONVERTERS IS DETERMINED BY ADDING THE DENOMINATORS OF THE

RESISTORS

Q1129 Q3-04 DO YOU COMPUTE ANALOG VOLTAGES FOR GIVEN BINARY

7 8 4

COUNTS IN ELECTRONIC DIGITAL-TO-ANALOG (D/A) CONVERTERS

Q1130 Q3-05 DO YOU PERFORM SAMPLE FUNCTION TASKS ON VARIABLE TIME

7 8 6

ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS

Q1131 Q3-06 DO YOU PERFORM HOLD FUNCTION TASKS ON VARIABLE TIME

8 8 6

ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS

Q1132 Q3-07 DO YOU PERFORM COMPARE FUNCTION TASKS ON VARIABLE

8 9 5

TIME ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS

Q1133 Q3-08 DO YOU PERFORM DIGITIZE FUNCTION TASKS ON VARIABLE

7 8 6

TIME ANALOG-TO-DIGITAL (A/D) CONVERTER CIRCUITS

Q1134 Q3-09 DO YOU PERFORM DON'T REMEMBER WHICH FUNCTION TASKS

7 8 2

ON VARIABLE TIME ANALOG-TO-DIGITAL (A/D) CONVERTER

CIRCUITS

Q1135 Q3-10 DO YOU USE OR REFER TO SAMPLE FUNCTION OF A/D

7 8 2

CONVERTERS

Q1136 Q3-11 DO YOU USE OR REFER TO HOLD FUNCTION OF A/D

8 9 2

CONVERTERS

Q1137 Q3-12 DO YOU USE OR REFER TO COMPARE FUNCTION OF A/D

8 9 2

CONVERTERS

Q1138 Q3-13 DO YOU USE OR REFER TO DIGITAL FUNCTION OF A/D

8 10 4

CONVERTERS

Q1139 Q3-14 DO YOU PERFORM ANY TASKS ON MECHANICAL ANALOG-TO-

8 8 5

DIGITAL (A/D) CONVERTERS

STORAGE DEVICES

DIGITAL TO
ANALOG CONVERTERS

PCT MEMS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK

SPC SPC SPC
126 127 128

PHANTASTRONS

R1140 R1-01 DO YOU WORK WITH PHANTASTRON CIRCUITRY IN YOUR PRESENT JOB

63 63 63

R1141 R2-01 IN YOUR PRESENT JOB DO YOU WORK WITH SCHMITT TRIGGER CIRCUITS

33 35 29

R1142 R2-02 DO YOU TRACE DATA FLOW THROUGH SCHMITT TRIGGER SCHEMATIC DIAGRAMS

30 32 24

R1143 R2-03 DO YOU USE OR REFER TO SCHMITT TRIGGER LOGIC SYMBOLS

27 28 24

R1144 R3-01 IN YOUR PRESENT JOB DO YOU FABRICATE MULTICONDUCTOR CABLES

72 75 61

R1145 R3-02 DO YOU FABRICATE COAXIAL CABLES

82 82 80

S1146 S1-01 IN YOUR PRESENT JOB DO YOU PERFORM ANY TASKS ON VISUAL READOUT SYSTEMS

38 41 31

S1147 S1-02 DO YOU PERFORM ANY TASKS ON NIXIE LIGHTS OR NIXIE LIGHT DECODER SYSTEMS

12 13 6

S1148 S1-03 DO YOU ANALYZE NIXIE LIGHT DECODER SYSTEMS USING BOOLEAN ALGEBRA

6 7 2

S1149 S2-01 DO YOU WORK WITH PHOTO TUBES IN YOUR PRESENT JOB

6 7 5

S1150 S3-01 IN YOUR PRESENT JOB DO YOU WORK WITH CHOPPER CIRCUITS

42 40 49

S1151 S3-02 DO YOU MEASURE EXCITATION FREQUENCIES

18 19 13

S1152 S3-03 DO YOU MEASURE VOLTAGE-CURRENT PHASE RELATIONSHIPS

18 19 14

S1153 S3-04 DO YOU USE OR REFER TO EXCITATION FREQUENCIES

20 22 15

S1154 S3-05 DO YOU USE OR REFER TO VOLTAGE-CURRENT PHASE RELATIONSHIPS

17 18 14

S1155 S3-06 DO YOU USE SERVOS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION

32 31 36

S1156 S3-07 DO YOU USE DETECTORS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION

33 32 36

S1157 S3-08 DO YOU USE ERROR SIGNAL DEVICES IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION

36 34 42

S1158 S3-09 DO YOU USE COMPARISON CIRCUITS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION

36 35 39

T1159 T1-01 DOES YOUR PRESENT JOB INVOLVE ANY TASKS DEALING WITH INFRARED SYSTEMS

1 2 0

T1160 T1-02 DO YOU INSPECT INFRARED SYSTEMS

1 1 0

T1161 T1-03 DO YOU CLEAN INFRARED SYSTEMS

1 1 0

T1162 T1-04 DO YOU ADJUST OR CALIBRATE INFRARED SYSTEMS

1 1 0

T1163 T1-05 DO YOU OPERATE INFRARED SYSTEMS

1 1 0

T1164 T1-06 DO YOU TROUBLESHOOT WIRE CONNECTIONS OF INFRARED SYSTEMS

0 0 0

T1165 T1-07 DO YOU TROUBLESHOOT MAJOR ASSEMBLIES OF INFRARED SYSTEMS

0 0 0

T1166 T1-08 DO YOU TROUBLESHOOT DOWN TO INFRARED SYSTEM COMPONENT PARTS

1 1 0

T1167 T1-09 DO YOU REMOVE OR REPLACE MAJOR ASSEMBLIES OF INFRARED SYSTEMS

1 1 0

T1168 T1-10 DO YOU REMOVE OR REPLACE INFRARED SYSTEM COMPONENT PARTS

1 1 0

PHOTO SENSITIVE DEVICES

SYNCHRONOUS VIBRATIONS
(CHOPPER CIRCUITS)

INFRARED

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK		SPC 126	SPC 127	SPC 128
T1169	T1-11 DO YOU USE OR REFER TO FAR REGION	0	0	0
T1170	T1-12 DO YOU USE OR REFER TO INTERMEDIATE REGION	1	1	0
T1171	T1-13 DO YOU USE OR REFER TO NEAR REGION	0	0	0
T1172	T1-14 DO YOU USE OR REFER TO MICRON	1	1	0
T1173	T1-15 DO YOU USE OR REFER TO GRAY BODIES	0	0	0
T1174	T1-16 DO YOU USE OR REFER TO BLACK BODIES	1	1	0
T1175	T1-17 DO YOU USE OR REFER TO ABSORPTION	0	0	0
T1176	T1-18 DO YOU USE OR REFER TO SCATTERING	1	1	0
T1177	T1-19 DO YOU USE OR REFER TO ABSOLUTE ZERO	0	0	0
T1178	T1-20 DO YOU PERFORM TASKS ON BLITZ	0	0	0
T1179	T1-21 DO YOU PERFORM TASKS ON TARGET BUTTONS	1	1	0
T1180	T1-22 DO YOU PERFORM TASKS ON ERECTOR LENSES	1	1	0
T1181	T1-23 DO YOU PERFORM TASKS ON OCULAR LENSES	1	1	0
T1182	T1-24 DO YOU PERFORM TASKS ON CORRECTION LENSES	0	0	0
T1183	T1-25 DO YOU PERFORM TASKS ON FILTERS	1	1	0
T1184	T1-26 DO YOU PERFORM TASKS ON SPHERICAL MIRRORS	1	1	0
T1185	T1-27 DO YOU PERFORM TASKS ON PLANE MIRRORS	0	0	0
T1186	T2-01 DOES YOUR PRESENT JOB INVOLVE ANY TASKS DEALING WITH LASERS	1	1	1
T1187	T2-02 DO YOU INSPECT LASER SYSTEMS	1	0	1
T1188	T2-03 DO YOU CLEAN LASER SYSTEMS	1	0	1
T1189	T2-04 DO YOU OPERATE LASER SYSTEMS	1	1	1
T1190	T2-05 DO YOU OPERATE LASER SYSTEMS	1	0	1
T1191	T2-06 DO YOU TROUBLESHOOT WIRE CONNECTIONS OF LASER SYSTEMS	1	0	1
T1192	T2-07 DO YOU TROUBLESHOOT MAJOR ASSEMBLIES OF LASER SYSTEMS	1	1	1
T1193	T2-08 DO YOU TROUBLESHOOT TO COMPONENT PARTS OF LASER SYSTEMS	1	0	1
T1194	T2-09 DO YOU REMOVE OR REPLACE MAJOR ASSEMBLIES OF LASER SYSTEMS	1	0	1
T1195	T2-10 DO YOU REMOVE OR REPLACE COMPONENT PARTS OF LASER SYSTEMS	0	0	1
T1196	T2-11 DO YOU USE OR REFER TO ANGSTROMS (A)	0	0	1
T1197	T2-12 DO YOU USE OR REFER TO ELECTRON ENERGY LEVELS	1	0	1
T1198	T2-13 DO YOU USE OR REFER TO GROUND STATE	1	0	1
T1199	T2-14 DO YOU USE OR REFER TO EXCITED STATE	1	0	1
T1200	T2-15 DO YOU USE OR REFER TO PACKET OF RADIATION	1	1	1
T1201	T2-16 DO YOU USE OR REFER TO PHOTONS	1	0	1
T1202	T2-17 DO YOU USE OR REFER TO SPONTANEOUS EMISSION	0	0	1
T1203	T2-18 DO YOU USE OR REFER TO STIMULATED EMISSION	0	0	1
T1204	T2-19 DO YOU USE OR REFER TO COHERENCE OR INCOHERENCE	1	0	1
T1205	T2-20 DO YOU USE OR REFER TO INVERSION LEVEL	0	0	0
T1206	T2-21 DO YOU USE OR REFER TO MONOCHROMATIC	0	0	0
T1207	T2-22 DO YOU WORK WITH ACTIVE MATERIALS	0	0	0
T1208	T2-23 DO YOU WORK WITH PUMPING SOURCES	0	0	0
T1209	T2-24 DO YOU WORK WITH FULL SILVERED (100% REFLECTIVE) MIRRORS	0	0	0

LASERS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK

SPC SPC SPC
126 127 128

T1210 12-25 DO YOU WORK WITH HALF SILVERED 1928 REFLECTIVE)

MIRRORS

T1211 12-26 DO YOU WORK WITH HELICAL FLASHTUBES

T1212 12-27 DO YOU WORK WITH RUBY

T1213 12-28 DO YOU WORK WITH HELIUM-NEON

T1214 12-29 DO YOU WORK WITH HELIUM-XENON

T1215 12-30 DO YOU WORK WITH XENON

T1216 12-31 DO YOU WORK WITH CESIUM-HELIUM

T1217 12-32 DO YOU WORK WITH ARGON

T1218 12-33 DO YOU WORK WITH NEODYMIUM IN GLASS

T1219 12-34 DO YOU WORK WITH GALLIUM ARSENIDE

T1220 13-01 IN YOUR PRESENT JOB DO YOU WORK WITH DISPLAY TUBES,
SUCH AS DIRECT VIEW STORAGE (DVST) OR MULTIPLE MODE
STORAGE TUBES (MMST)

T1221 13-02 DO YOU INSPECT DVST OR MMST

T1222 13-03 DO YOU CLEAN DVST OR MMST

T1223 13-04 DO YOU ADJUST OR CALIBRATE DVST OR MMST

T1224 13-05 DO YOU OPERATE SYSTEMS THAT CONTAIN DVST OR MMST

T1225 13-06 DO YOU TROUBLESHOOT DVST OR MMST

CIRCUITS

T1226 13-07 DO YOU REMOVE OR REPLACE DVST OR MMST TUBES FROM

MAJOR ASSEMBLIES OR UNITS

T1227 13-08 DO YOU PERFORM TASKS THAT MAKE IT NECESSARY TO NAME

THE VARIOUS ELEMENTS OF DVST

T1228 13-09 DO YOU PERFORM TASKS THAT MAKE IT NECESSARY TO NAME

THE VARIOUS ELEMENTS OF MMST

T1229 13-10 DO YOU PERFORM TASKS ON FLOOD GUNS

T1230 13-11 DO YOU PERFORM TASKS ON WRITE GUNS

T1231 13-12 DO YOU PERFORM TASKS ON ATTACK GUNS

T1232 13-13 DO YOU PERFORM TASKS ON ERASE GUNS

T1233 13-14 DO YOU PERFORM TASKS ON STORAGE GRIDS

U1234 U1-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY PROGRAMMING

TASKS

U1235 U1-02 DO YOU USE OR REFER TO DECIMAL SYSTEMS

U1236 U1-03 DO YOU USE OR REFER TO PROGRAMS

U1237 U1-04 DO YOU USE OR REFER TO HEXIDECIMAL SYSTEMS

U1238 U1-05 DO YOU USE OR REFER TO 8-4-2-1 SYSTEMS

U1239 U1-06 DO YOU USE OR REFER TO FOUR SYSTEMS

U1240 U1-07 DO YOU USE OR REFER TO BINARY SYSTEMS

U1241 U1-08 DO YOU USE OR REFER TO TIME-SHARING

U1242 U1-09 DO YOU USE OR REFER TO DATA WORDS

U1243 U1-10 DO YOU USE OR REFER TO ADDRESS WORDS

U1244 U1-11 DO YOU USE OR REFER TO ADDRESS/SUBADDRESS

U1245 U1-12 DO YOU USE OR REFER TO STEERING/INFORMATION

U1246 U1-13 DO YOU USE OR REFER TO INFORMATION WORDS

U1247 U1-14 DO YOU PERFORM TASKS ON SINGLE LEVEL PROGRAMMING

U1248 U1-15 DO YOU PERFORM TASKS ON MULTI-LEVEL PROGRAMMING

DISPLAY TUBES

PROGRAMMING

PCT MEMBERS RESPONDING 'YES' BY SELECTED GRPS

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TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

DY-TSK

	SPC	SPC	SPC	SPC
	126	127	128	129
U1249 U1-14 DO YOU PERFORM TASKS ON INPUT DEVICES	4	5	1	
U1250 U1-17 DO YOU PERFORM TASKS ON STORAGE DEVICES	4	5	1	
U1251 U1-18 DO YOU PERFORM TASKS ON ARITHMETIC SECTIONS	2	2	1	
U1252 U1-19 DO YOU PERFORM TASKS ON CONTROL SECTIONS	3	4	0	
U1253 U1-20 DO YOU PERFORM TASKS ON OUTPUT DEVICES	3	3	0	
U1254 U1-21 DO YOU PERFORM TASKS ON POWER SUPPLIES	3	5	0	
U1255 U2-01 DO YOU USE DECIBELS TO EXPRESS AMPLIFICATION AND ATTENUATION	61	82	79	
U1256 U2-02 DO YOU USE LOGARITHMS TO COMPUTE OUTPUT POWER IN DECIBELS	19	22	13	
U1257 U2-03 DO YOU USE LOGARITHMS TO COMPUTE ATTENUATION IN DECIBELS	21	23	13	
U1258 U2-04 DUMMY TASK TO IDENTIFY INCUMBENTS WHO PERFORMED NO TASKS	1	2	1	

DB AND POWER
RATIOS

AD-A046 017

AIR FORCE OCCUPATIONAL MEASUREMENT CENTER LACKLAND A--ETC F/G 5/9
AVIONIC NAVIGATION SYSTEM SPECIALIST AFSC 32851.(U)
SEP 77 T J O'CONNOR, E J WEBER

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INFORMATION

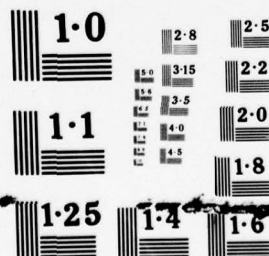
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NATIONAL BUREAU OF STANDARDS
MICROCOPY RESOLUTION TEST CHART

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<table border="0"> <tr> <td>Electronic principles</td> <td>Electronics</td> </tr> <tr> <td>Basic electronics</td> <td>Air Force Training</td> </tr> <tr> <td>Avionics</td> <td>Teaching Methods</td> </tr> <tr> <td>Electronic Equipment</td> <td>Training</td> </tr> <tr> <td>Electronic Technicians</td> <td></td> </tr> </table>			Electronic principles	Electronics	Basic electronics	Air Force Training	Avionics	Teaching Methods	Electronic Equipment	Training	Electronic Technicians	
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)												
<p>This report summarizes the results of the administration of the Electronic Principles Inventory to airmen assigned as Avionic Navigation System Specialist (AFSC 32851). The report gives a detailed listing of the technical tasks and knowledge needed to perform the jobs within the specialty or career ladder.</p> <p style="text-align: center;">CONTINUED</p>												

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✓ This specialty has the following functions:

Installs, maintains, troubleshoots, and repairs avionic electronic navigation systems equipment and test equipment. Performs preventive maintenance on avionic navigation equipment. Maintains inspection and maintenance records. Supervises avionic navigation equipment personnel.

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